A LAMINATED CARBONATE RECORD OF LATE HOLOCENE PRECIPITATION-EVAPORATION FROM PRETTY LAKE, LAGRANGE COUNTY, INDIANA

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Late Holocene hydroclimate variability in the midcontinental United States is not well understood because there is a lack of high-resolution paleoclimate records constraining historical climate patterns for the region. Here, a 2500-year-long multi proxy lake sediment record from a northern Indiana kettle lake is used to examine spatial and temporal scales of drought and pluvial patterns in the Midwest. Oxygen ($\delta^{18}O_{cal}$) isotope analysis of authigenic carbonate and the sedimentary lithic abundance (%lithics) are the primary datasets used to evaluate hydroclimate trends with supporting information from total organic matter, total carbonate and magnetic susceptibility. We additionally derive a record of local evaporation by subtracting the isotopic composition of precipitation ($\delta^{18}O_{precip}$) as characterized by the nearby Martin Lake, IN, record, from the Pretty Lake $\delta^{18}O_{cal}$ record. The combined Pretty Lake hydroclimate record documents climate variability during the last 2 millennia and shows that the Midwest has experienced a wide range of evaporative regimes during the late Holocene. We notice a consistent relationship between the Pretty and Martin Lake multi-proxy records; where reduced (increased) evaporative periods and higher (lower) lake levels at Pretty Lake mostly align with increased (decreased) Gulf sourced precipitation and stream erosion with longer (shorter) warm seasons at Martin Lake. Early periods of much drier, and weakened warm-season evaporation patterns dominated from 600 BCE to 900 CE. Evidence of a prolonged period of enhanced warm-season pluvial conditions, with less evaporation and higher lake levels, during the Medieval Climate Anomaly (MCA) between 900 to 1350

CE; and a pronounced century of arid conditions throughout the Little Ice Age (LIA) from 1350 to 1700 CE followed by a gradual decrease in evaporation and rising lake levels starting at 1700 CE and continuing to present. These trends track other Midwest regional hydroclimate climate records, but show an anti-phased relationship with records from the High Plains and western United States regions. This supports the idea that a hydrocilmate dipole exists between the Midwest and western United States driven largely by mean state changes in the Pacific North American teleconnection pattern, but with modification by local and in-lake responses to mean climate states.

Broxton Bird, PhD, Chair

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1.0 Introduction

Severe and prolonged droughts are a common feature of late Holocene North American climate (Winkler et al., 1986). Several periods of profound and persistent drought during the last 2000 years have been identified in North America in recent decades from existing Midwest and High Plains records. In northern Minnesota and eastern Michigan, water table variations from Minden Bog and Hole Bog show a depositional hiatus in the Minden Bog and lower water tables at Hole Bog during the Little Ice Age (LIA; 1350-1850 CE) indicating that water tables dropped in response to regional aridity in the Midwest (Booth et al., 2006). In contrast, the Moon Lake, North Dakota record indicates more saline conditions during and prior to the Medieval Climate Anomaly (MCA; 850-1350 CE) indicating another period of regional aridity in the west (Laird et al., 1998). Other hydroclimate evidence from the High Plains includes active dune fields and aeolian activity, supporting the occurrence of MCA drought in the west (Woodhouse and Overpeck, 1998). However, the lack of hydroclimate records other than relatively low-resolution pollen has limited our understanding of the nature and timing of Holocene climate changes in the Midwest. This creates a need for high-resolution records to study regional drought and pluvial spatial patterns, causes and relationships with climate change to understand the long-term controls of North American drought. In addition, these records are important for a better assessment of modern hydroclimate sensitivity and its implications and risk towards human society. The Midwest is currently one of the world's greatest agricultural centers; and periods of increased aridity that persist over such a large region represent one of the most significant threats to the vital but fragile agriculture industry. This is demonstrated during the single year Midwest

drought in 2012 where significant damage to crop yields and high crop loss ratios occurred across the Midwest (Schnitkey, 2013).

Two of the most significant climate events of the past 2,000 years were the MCA and the LIA, which show distinct climate expressions in the Midwest and are consistent with phase patterns of the PNA, linking Midwest hydroclimate with ocean-atmosphere circulation patterns. During the MCA, several North American "mega-droughts" (multi-decade droughts) occurred in the western United States and Great Plains region. These mega-droughts have been linked to the decline of Native American Indian population centers and cultures in the southwestern US (Cook et al., 2004). However large-scale climate reconstructions suggest that the MCA aligned with a -PNA phase suggesting warmer and wetter conditions in the Midwest (Mann et al., 2009). During the LIA the Midwest experienced a smaller scale of arid and evaporative conditions and is more accepted as a period of dry and cold global climate (Laird et al., 1996, Mann et al., 2009). Recognizing patterns of paleo-drought is important as they can help predict modern drought patterns in an imminent future of increasing global temperatures due to rising global greenhouse gas emissions and land-use. These critical conditions could lead to increased risks of hydrological and agricultural mega-droughts, similar to those during the MCA and LIA.

The Pretty Lake record represents a sub-decadally resolved multi-proxy record of local Midwestern evaporation variability from Pretty Lake, northeastern Indiana based on calcite oxygen isotopes ($\delta^{18}O_{cal}$) and sedimentary abundance of detrital clastic material (%lithics). Combined with $\delta^{18}O_{cal}$, %lithic and $\delta^{13}C_{cal}$ records from nearby Martin Lake, the Pretty Lake record provides additional detail regarding hydroclimate changes and the

occurrence of evaporative periods at different spatial scales. This combination of proxies creates a more complete picture of historical local climate, placing modern Midwestern climate variability in context of the past 2500 years. When compared with existing North American paleoclimate records, patterns suggests that severe Midwestern droughts were broadly anti-phased between the western and eastern US in a way that is consistent with the Pacific North American (PNA) telleconnection pattern (Leathers et al., 1991, Coleman et al., 2003, Liu et al., 2014). Because the PNA influences climate across the continental US in predictable ways, improved late Holocene hydroclimate records, like Pretty Lake, are critical to further constrain and understand the control and contribution of teleconnections and their climate mechanisms on North American patterns of long-term drought and pluvials.

2.0 Study Area

Pretty Lake (294 m asl; 41°34'31.15"N, 85°14'59.31"W) is a 25 m deep monomictic kettle lake located in northeastern Indiana, Lagrange County (Fig. 1; Wetzel, 1970). It is one of many small kettle lakes located in an inter-lobate geomorphic region of lakes in the northeast region formed by interactions between the Saginaw and Erie lobes of the Laurentide ice sheet as it retreated approximately 16,000 years ago (Fleming, 1994). Glacial deposits in the region vary between 91.2 and 122 meters thick covering underlying shale and limestone bedrock with low relief (Wayne et al., 1966).

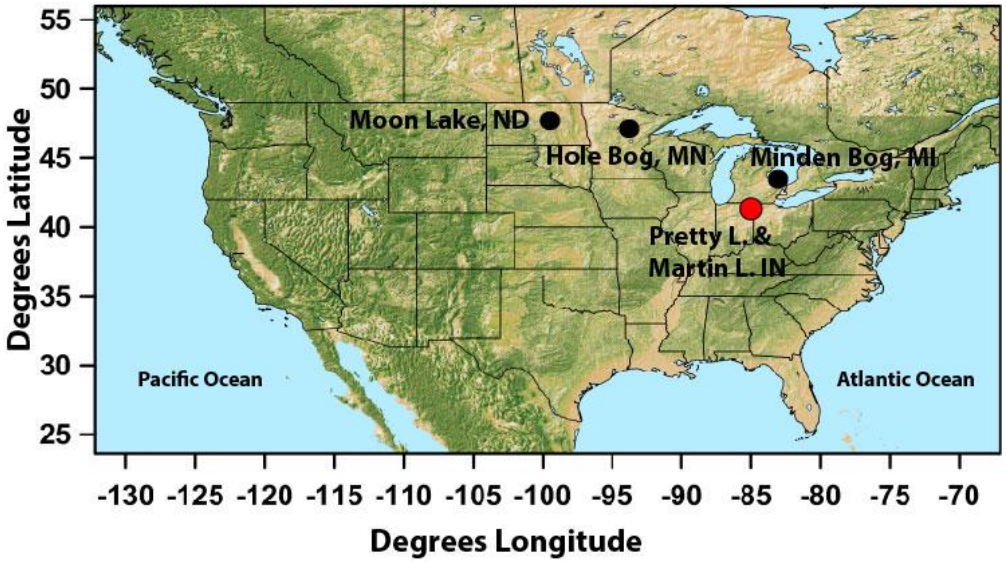

Figure 1. Study site location of Pretty and Martin Lake marked with a red circle in Lagrange County, Indiana; other paleoclimate records are in noted with black circles. These records are Moon Lake, ND; Minden Bog, MI; Hole Bog, MN (Laird et al., 1996, Booth et al., 2006).

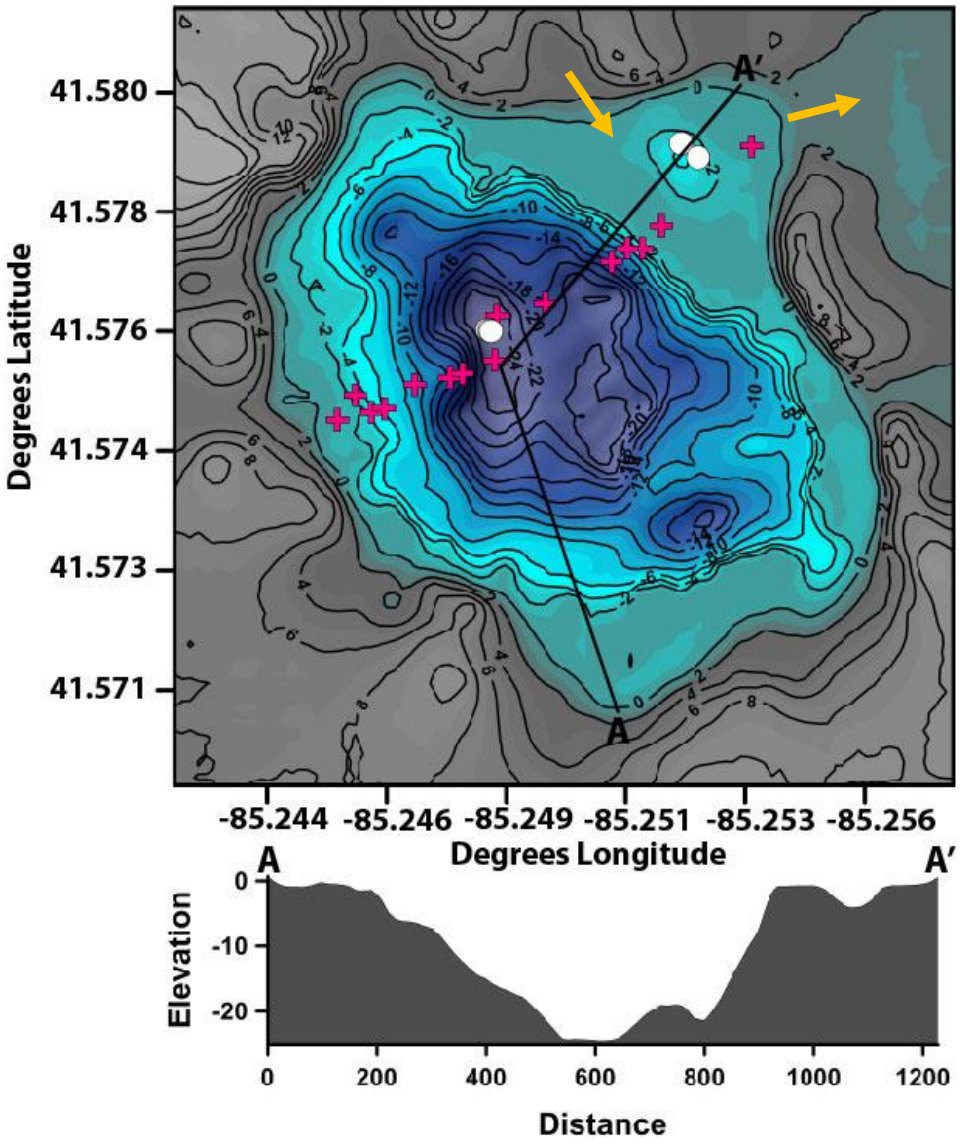

Figure 2. Bathymetric map of Pretty Lake with 5 m contours and the cross sectional profile below. White dots again show core locations, the red X's show cross sectional grab sample locations and the orange arrows show inflow and outflow.

Pretty Lake is part of the Great Lake's drainage basin, contributing its flow to Lake Michigan. The watershed extends north of Pretty Lake with the highest areas located along the watershed's northeastern edge. The lake has a small watershed area, 4.98 km^2, and approximately a ratio of 6.7:1 watershed area to lake area (Fig. 3). Surface water drains into the lake by way of Deal Ditch, a natural waterway depression modified

to a manmade drain in 1952, located at the north end of the lake. The only outlet is located in the northeast corner, from which water exits Pretty Lake and flows east and north through Lagrange County as Turkey Creek.

The lake's surface area is estimated at 0.745 km^2 and the volume estimated at 5.86 $x10^6$ m^3 (Ficke, 1966) (Fig. 2). Water budget calculations show that the amount of precipitation received over the catchment is smaller than the volume of the lake suggesting Pretty Lake is hydrologically closed with a hydraulic residence time of 3.1 years (New, 2007). The lake basin lies entirely within glacial sediment composed of Wisconsin glacial till a top of limestone and Devonian shale bedrock (Fleming, 1994).

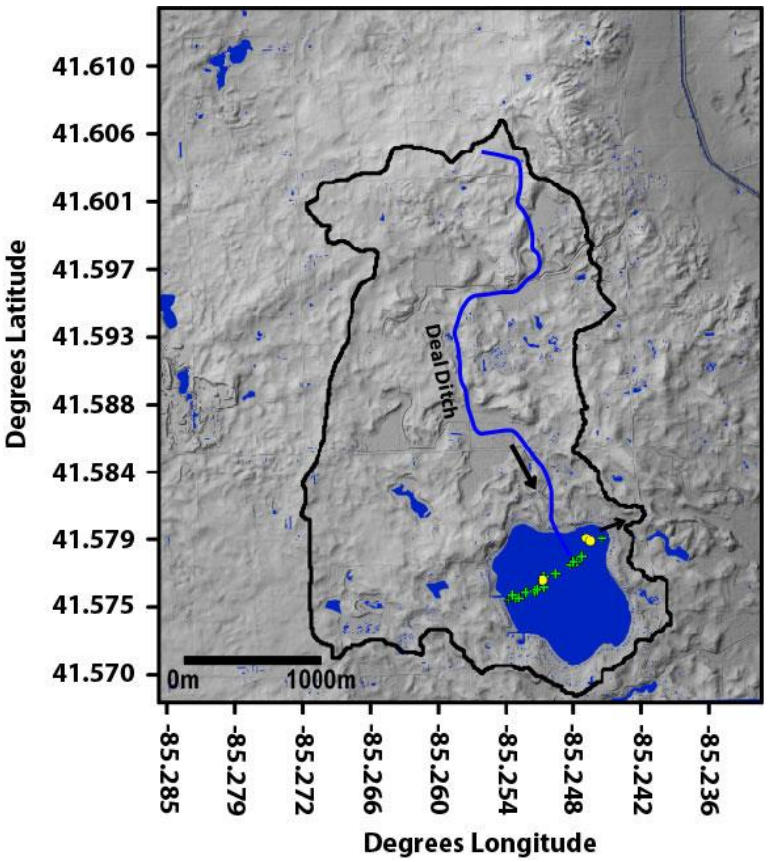

Figure 3. LiDAR watershed map, with arrows showing flow directions and yellow dots showing core locations. The green X's show cross sectional grab sample locations.

The original morphometry of the ice-block basin has been modified by the sediments that have accumulated subsequently. The basin bathymetry is characterized by a marl lake mount near the western shore and a large central depression with an irregular bottom. The broad shallow littoral shelf borders the lake's perimeter with its widest section in the northeast corner. In this corner there is a ~5 m deep basin surrounded by a shallow plain comprised of dense, diamict enclosing and possibly isolating the shallow basin from the larger basin during lower lake levels. There is evidence in the bathymetry of shallow canyons cutting into the shelf's platforms, creating steep-sided valleys that may be extensions to runoff streams during low lake level.

Measurements of limnological variables in the Pretty Lake water column were made with a hydrolab. Results confirm earlier work (Wetzel, 1970) showing that the lake's water column is stratified with cool anoxic water below 7 m during the spring and summer and a slight alkaline pH that remains steady for the entire water column (Fig. 4;

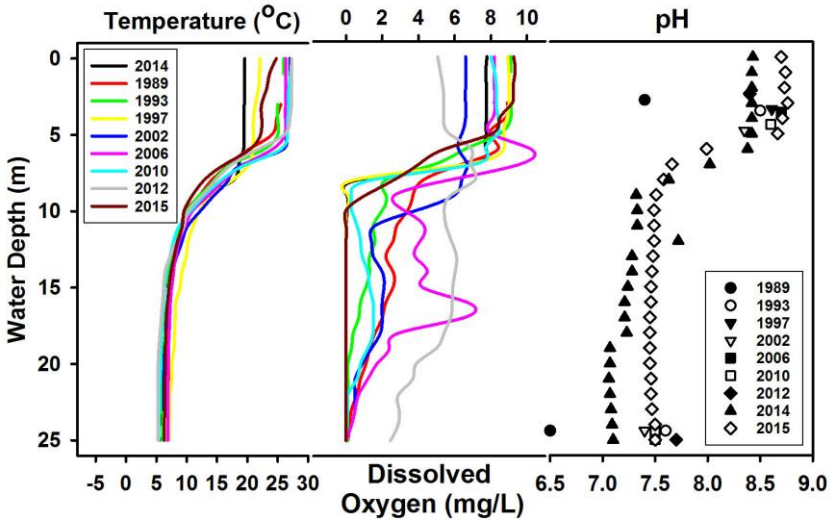

Figure 4. Pretty lake water column quality assessments of temperature, dissolved oxygen and pH from Indiana Clean Lakes Program; 1989-2012 (ICLP, 2013) and field seasons 2014 and 2015.

Appendix G). Though the water column appears relatively stable during most of the year it is not permanently anoxic and is only stratified seasonally, when warm summer temperatures increase lake water temperatures inducing stable stratification. This follows similar stratification patterns of other kettle lakes within the region, where most show thermal stratification during the summer that is accompanied by anoxic conditions for during the warm season (Wetzel, 1973). However, the water overturns once annually as a consequence of the strong seasonal changes occurring in the fall/winter months with a drop in temperature, causing the overturn convection and a physical mixing of the surface and the deep waters.

Weather data from the nearby Angola, IN weather station (41°64'34.37"N, 85°00'24.66"W), are used here because the station has the longest duration records, extending back to 1893 for precipitation, 1920 for temperature and 2000 for other data (Iclimate, 2016). Average annual temperature for the region, is 8.8˚C, with summer (June, July, August; JJA) temperatures averaging 21.0˚C and winter (December, January, February; DJF) temperatures averaging -4.1˚C (Fig. 5). During winter months when the ambient temperature of the air is lower than the temperature of the water (> 0˚C) a layer of ice covers the lake. Ice cover over the surface of the lake is common from December to February but can persist beyond this range during an especially cold year (Andresen et al., 2012). Precipitation occurs in all months and seasons, but is generally greatest during in the spring and least during the late-fall months, averaging 91.85 cm/year. Evaporation for the region is recorded using ‘standard pan’ methods from multiple northern Indiana weather stations complied by the Angola, IN weather station; results are averaged for the northern region. Calculations for annual evaporation averages 43.18 mm/year (Iclimate,

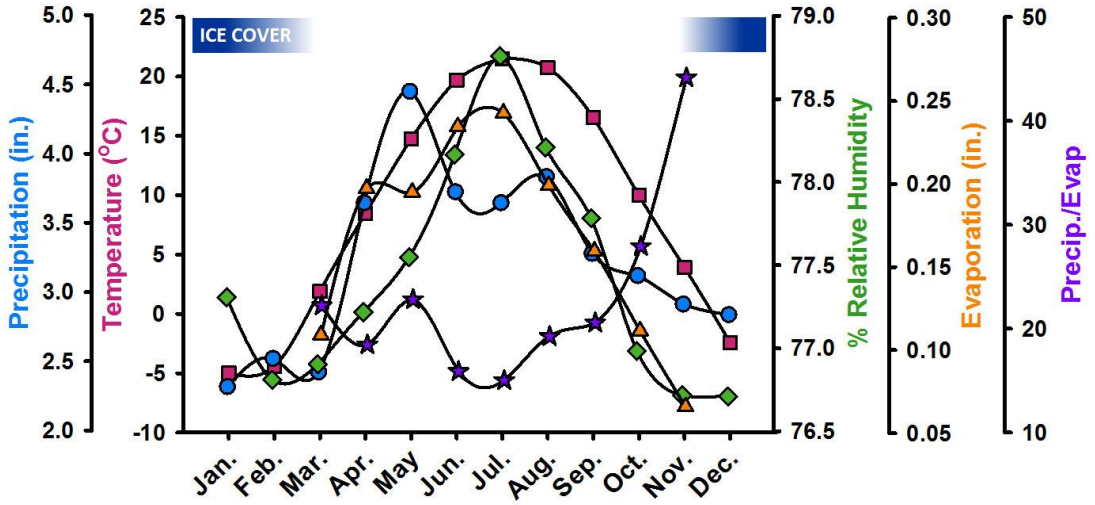

Figure 5. Figure shows Indiana climate data collected by Purdue University. Evaporation pan paired with the three evaporatively sensitive variables (precipitation, temperature, relative humidity) and with indication of ice covered months. P/E data is derived from precipitation and evaporation pan data. Data comes from Angola, IN but multiple locations are averaged for the evaporation pan data. Precipitation, temperature and evaporation pan data is averaged from 2000-2014; relative humidity data is from 2013 (Iclimate, 2016).

2016). Annual precipitation/evaporation (P/E) ratio was calculated using the climate data presented above. The P/E ratio is lowest in the summer months, when evaporation is the highest and precipitation drops slightly. The ratio is highest in the late fall months just prior to the formation of ice cover when precipitation is lower, evaporation is minimal, but lake surface temperatures remain elevated. Monthly relative humidity data from 2013 has an annual average of 77.4 %, with a JJA maximum (78.4 %) and DJF minimum (76.9%). The air is driest during the winter months, at which time the relative humidity can drop below 54% and is most humid during the summer months and can exceed 90% (Andresen et al., 2012). Prevailing winds in Indiana are generally from the southwest but are more persistent and blow from a northerly direction during the winter

months. There is little seasonal variation in wind speed, with an annual average of 9.6 MPH; winter monthly average of 10.7 MPH and summer monthly average of 7.9 MPH.

Indiana's climate can be described as temperate with cold winters and warm summers (Andresen et al., 2012). Imposed on the daily and seasonal fluctuations are changes occurring as surges of polar air move southward or tropical air moves northward. The Polar Front Jet Stream (PFJS) is of Aleutian origin and is the primary controller of climate across much of North America, where the PFJS orientation is modulated by variations of the PNA pattern (Andresen et al., 2012). During +PNA phases, a meridional flow pattern, along longitude lines, of the PFJS over northern North America enhances upper atmosphere ridging and troughing (Coleman et al., 2003, Liu et al., 2014). This jet stream drives large, synoptic-scale weather disturbances migrating mostly from the northwest, leading to reduced precipitation and temperature in the Midwest as a result of more north Pacific air mass incursions (Andresen et al., 2012). Winter and transition season conditions are heavily dependent on the orientation and position of the PFJS. This connection weakens during the warm season when a weakened PFJS flow forms a zonal patterns, flow pattern along latitudinal lines, over northern North America during -PNA phases. This zonal pattern increases anticyclonic flow in this region enhancing Gulf of Mexico warm, humid air mass migration into the Midwest, increasing average precipitation and temperatures (Andresen et al., 2012). During the warm season months (Apr. - Nov.), Midwestern rain storm events associated with mesoscale convective storms from the Gulf of Mexico produce excessive rain over some regions (Heideman et al., 1988). Extreme warm-season rainstorm events are infrequent, but lead to flash flooding and soil erosion during the spring and summer. Increasing east to west, the 10 largest

precipitation events deliver between 30% and 50% of the total annual precipitation on average during the warmer months (Pryor et al., 2009).

On interannual to decadal timescales, the PNA is modulated by mid-latitude atmospheric responses to tropical Pacific sea surface temperatures (SST) associated with the El Niño Southern Oscillation (ENSO) and the Pacific Decadal Oscillation PDO (Liu et al., 2014). During warm ENSO (El Niño) and PDO events, a deepened Aleutian low anomaly over northern North America enhance +PNA ridge and trough circulation and associated Midwest climate conditions. Conversely, during cool ENSO (La Niña) and PDO phases the opposite conditions enhance -PNA related zonal circulation.

3.0 Methods

3.1 Core Collection

Two long sediment cores were retrieved from the deepest part (25m) of Pretty Lake in summer 2014 using a modified piston corers (Appendix A). Sequential drives were overlapped by 50.0 cm to ensure continuous recovery. The sediment water interface was captured in a single 1.8 m surface core collected in summer 2015. By matching stratigraphy down core through high resolution images and data from preliminary geochemical analysis, a composite core record was created from individual drives. Together the three cores comprise an 11.75 m lake sediment archive capturing the Holocene and late glacial. Dense, poorly sorted diamict deposits below this depth prevented further penetration.

3.2 Initial Core Description

All sediment cores were split, into work and archive halves, described and photographed for sedimentology characterization at the IUPUI Paleoclimatology Laboratory. The cores were allowed to oxidize once split for better characterization of stratigraphy and imaging with a GEOTEK Multi Sensor Core Logger (MSCL) under cross polarized LED lighting.

3.3 Magnetic Susceptibility

Low field magnetic susceptibility (MS) was measured on split cores at room temperature at 0.5 cm intervals using an automated Bartington MS2E point sensor. The area of response was 3.8 mm x 10.5 mm and a depth response of 50% at 1 mm. Values are reported in SI units (x 10^{-5} or chi χ; Appendix C).

3.4 Bulk Density and Loss on Ignition

Immediately after being split, sediment cores were volumetrically subsampled ($1cm^3$) at 2 cm intervals. Wet samples were weighed and then dried for 24 hr at 60˚C before being reweighed to determine dry bulk density (BD; g/cm^3). Total organic matter (%TOM) was determined by weight loss after ignition at 550˚C for 4 hr. Total carbonate (%TC) was determined by weight loss after a second ignition at 1000˚C for 2 hr modified from Dean Jr. (1974) and Heiri et al. (2001). The residual (lithics + biogenic opal; % residual) was calculated by subtracting %TOM and %TC from 100 (Appendix B).

3.5 Geochronology

Radiocarbon age determination by accelerator mass spectrometry (AMS ^{14}C) was conducted on twenty-four samples of various organic macro-fragments and charcoal from all three cores at depths that provide a complete sediment chronology. Each sample was manually cleaned and chemically pretreated with an acid-base-acid wash following University of California, Irvine, protocols. All AMS ^{14}C measurements were made on graphitized samples at the University of California Irvine Keck AMS ^{14}C lab. The median probability age and 2σ error after calibration to thousands of calendar years before present (ka; present = 1950 AD) was determined with the online program CALIB 7.0 (Stuiver et al., 1993). Modern dates with excess ^{14}C were calibrated with the online program CALIBomb (Reimer et al., 2004).

3.6 Carbonate isolation and oxygen isotope and analysis

Samples for carbonate isotope analysis ($\delta^{18}O_{cal}$ and $\delta^{13}C_{cal}$) were collected from the upper 2 m of the composite Pretty Lake sediment record at 0.5 cm intervals. Below 2 m samples were collected at 1 cm intervals. All samples were disaggregated in a 7%

hydrogen peroxide solution for 24 hrs prior to wet sieving at 63 μm to remove organic matter. To remove biogenic silica the fine carbonate fraction was then treated with a 50% bleach solution for 6 hr at 60˚ C, rinsed 3 times with DI water, freeze dried and homogenized (Bird et al., 2011). Samples were purged in sealed vials with helium for 5 min before being reacted with 100% phosphoric acid at 70° C for at least one hour prior to measurement. All measurements were made at the Indiana University-Purdue University Indianapolis Stable Isotope Biogeochemistry Laboratory on a MAT 252 isotope ratio mass spectrometer coupled with a GasBench II system. Results were calibrated to the NBS-19, NBS-18 and IAEA-09 standards and are reported in standard delta notation as the per mil (‰) deviation from Vienna Pee Dee Belemnite (VPDB) with a reported precision of ±0.1 for $\delta^{18}O$ and $\delta^{13}C$ (1σ).

3.7 % Lithics

Approximately 1.0 g of wet sediment was collected at 1 cm intervals from the composite record between 0 cm and 217 cm, for a total of 218 samples. The samples were dried for 24 hr at 60˚C, weighed, and then soaked in 50 ml of 35% H_2O_2 at room temperature for 24 hr. Then treated with five 20 ml aliquots of 35%H_2O_2 at 65˚C to remove organic matter (Gray et al., 2010). Biogenic silica was removed with a 20 ml 1N NaOH digestion (6 hr at 60◦C). Acid washing was performed because carbonate was present. Carbonates were digested by acid-washing samples (20 ml of 1 N HCl for 1 hr) that were found to have greater than 3.0% TC as determined by LOI. Treated samples were freeze dried and weighed to calculate the lithic abundance (%Lithics).

3.8 Water Isotopes

All water samples were analyzed at IUPUI for $\delta^{18}O$ and δD using a Picarro L2130-i Analyzer coupled to an autosampler and high-precision water vaporizer unit. Measurements were made and corrected for memory and drift following the methodology of van Geldern and Barth (Geldern et al., 2012). Final values were corrected to the VSMOW scale using calibrated standards from Los Gatos. Reported precision for $\delta^{18}O$ and δD are 0.1 and 0.6‰, respectively.

4.0 Results

4.1 Sedimentology

Sediments are finely laminated for most of the record with couplets consisting of dark organic/lithic matter and light tan to white carbonate (Fig. 6). The sediment cores can be divided into six stratigraphic units based on visual sedimentological variations. From 1200 to 1168 cm, there is extremely dense diamict sediment that is poorly sorted with pebbles and cobbles ranging from 0.5 to 1.5 cm in size. Above this there is a dense, dark woody layer from 1167 to 1151 cm. Between 1151 and 894 cm the sediment lacks laminations and consists of mostly mottled to massive tan and brown clay. From 894 to 887 cm there is a sharp change in the sedimentation. Above the change in sediment, there are laminations and below the sediment is tan to brown massive clayey. Above 887 to 43 cm lacustrine sediments are finely laminated, with mm-scale laminae alternating between dark and light colors. The modern sediment, 43 to 0 cm, is light in color and mottled with few laminations that are slightly deformed and further unconsolidated.

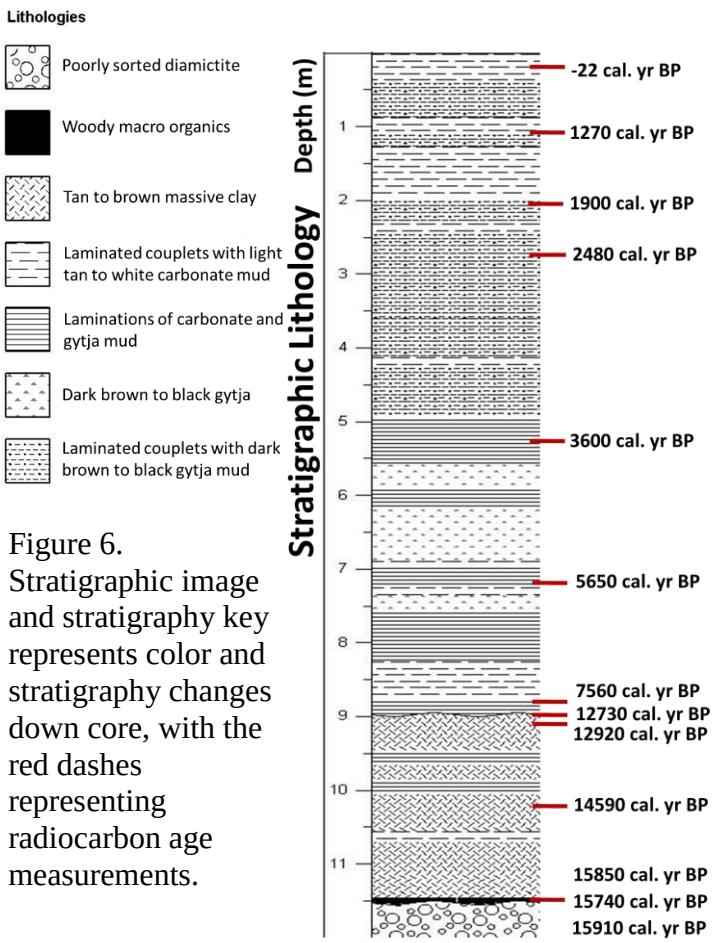

Figure 6. Stratigraphic image and stratigraphy key represents color and stratigraphy changes down core, with the red dashes representing radiocarbon age measurements.

4.2 Geochronology

Fourteen AMS of either charcoal or macro organic matter (i.e. stick, leaves) were dated with ^{14}C and calibrated to years CE/BCE (Table 1). The calibrated ^{14}C ages spanned from 1972 CE to 13,960 BCE. An age model was developed by fitting a fifth order polynomial to the radiocarbon ages above 887 cm because a gap in the distribution of ^{14}C ages between 887 and 894 cm suggests a hiatus (Fig. 7). Except for the suspected hiatus the age model shows generally consistent sedimentation rates (0.12 cm/yr) throughout the record.

Table 1. Results of the 20 AMS radiocarbon measurements measured at UCI and calibrated using CALIB and CALIBomb online applications (Laird et al., 1996, Reimer et al., 2004). Sample results in red are not used in the age model.

Lake	Core	Drive	Composite Depth	Material	^{14}C age	±	Age cal yr BP	±
Pretty Lake	C14	Surface	17	leaf	-3120	20	-22	1
Pretty Lake	E14	D1	127.5	charcoal	1350	90	1270	200
Pretty Lake	E14	D1	135.5	Charcoal	2260	170	2280	300
Pretty Lake	E14	D2	204.5	stick	1945	35	1900	60
Pretty Lake	E14	D2	297	Wood Stick	2440	20	2480	80
Pretty Lake	D14	D2	399	wood stick	4025	20	4480	50
Pretty Lake	D14	D3	532	leaf	3360	100	3600	200
Pretty Lake	D14	D4	611	wood	7015	25	7860	7015
Pretty Lake	D14	D4	611	Charcoal Bark	635	20	590	20
Pretty Lake	D14	D5	737	acorn cap	4940	20	5650	50
Pretty Lake	E14	D10	887	charcoal	6690	70	7560	6690
Pretty Lake	E14	D11	894	wood stick	10850	40	12730	50
Pretty Lake	D14	D7	918	stick	11060	100	12920	200
Pretty Lake	D14	D8	1035	branch	12450	45	14590	300
Pretty Lake	D14	D9	1151	wood	13185	35	15850	200
Pretty Lake	E14	D13	1153.5	charred bark	13110	60	15740	200
Pretty Lake	D14	D9	1156	wood stick	13235	40	15910	200

4.3 Loss on Ignition

Measurement results at Pretty Lake for %TC averaged 9.2% (n= 420), with a range of 29.3% and minimum of 0.5% and maximum of 29.8%; %TOM measurements averaged 21.4% (n= 420), with a range of 37.1% and minimum of 1.2% and maximum of 38.3%; and lastly %Residual measurements averaged 69.0% (n= 420), with a range of 40.5% and minimum of 48.8% and maximum of 89.3% (Fig. 8; Appendix B).

Above average highs for %TC occurred between 160 to 420 CE, 625 to 820 CE and 1600 CE to present; maxima occur at 510 to 960 and 1500 CE (Fig. 8). Below average lows occurred between 430 to 580 CE and 820 to 1600 CE; minima occur at 660 and 1690 CE.

Above average highs for %TOM occurred between 400 to 580 CE and 840 to 1600 CE; maxima occur at 740 and 1690 CE (Fig. 8). Below average lows occurred between 620 and 820 CE and 1600 to present; minima occur at 200 BCE, 530 and 1500 CE.

Above average highs for %Residual occurred between 400 BCE to 160 CE and 1520 to present; maxima occur at 115 BCE and 1885 CE (Fig. 8). Below average lows occurred between 160 to 1420 CE; minima occur at 511 and 842 CE.

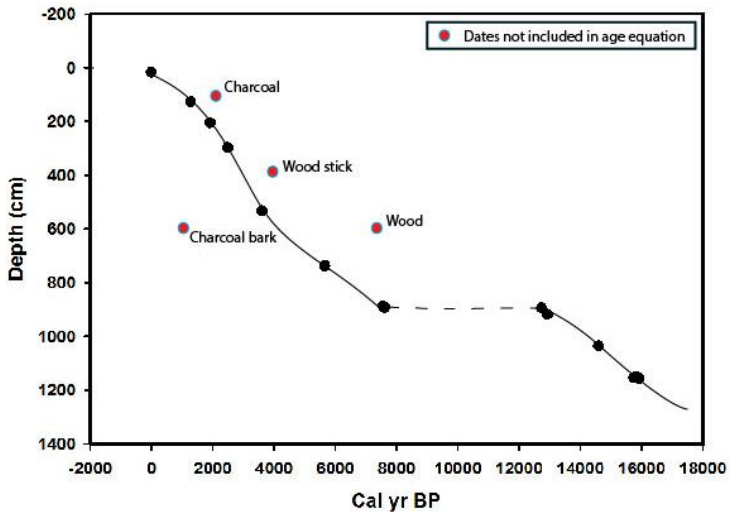

Figure 7. Pretty Lake age model constructed by applying a fifth order polynomial for the late to mid Holocene and a second order for the early Holocene portion to a total of 15 AMS radiocarbon measurements. The dashed line representing the hiatus in sedimentation.

4.4 Carbonate Oxygen Isotopes

Results for carbonate isotopes consist of 580 samples spanning the period from 2014 CE to 790 BCE. The average resolution per sample for the first 2093 years is 4 years and then decreases in resolution to 7 years for the remaining ~700 years of the record (Figure 8; Appendix D). Down core $\delta^{18}O_{cal}$ measurements averaged -5.9‰ with a 13.9‰ range between -2.5‰ and -16.4‰.

The isotope results show considerable variability that can be divided into several distinct periods that fluctuate between relatively stable high periods and sharp dramatic low periods. There appears to be an upper limit for the high values, averaging between -3.0 and -4.0‰. Plateaued high $\delta^{18}O_{cal}$ values occurred between 200 BCE to 450 CE, 600 to 900 CE, and 1600 to 1800 CE; with a rapid change to low $\delta^{18}O_{cal}$ values between 300 to 200 BCE, 500 to 600 CE, 900 to 1400 CE and 1500 to 1600. Pronounced maximum

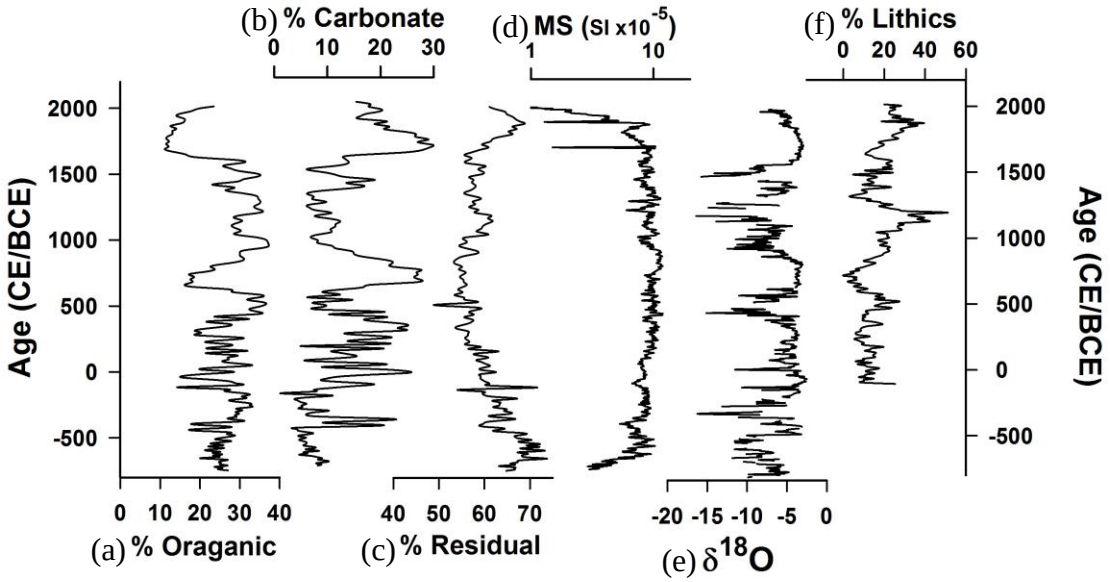

Figure 8. Graph of six sedimentological analyses time series from Pretty Lake. Moving left to right on each x-axis, graphs represent: a) LOI percent organic matter; b) LOI percent total inorganic carbonate; c) LOI percent residual; d) Magnetic susceptibility; e) Oxygen isotopic analysis of carbonate, $\delta^{18}O_{cal}$; f) Percent lithics.

$\delta^{18}O_{cal}$ values occurred at 30 BCE, 840 CE and 1760 CE; while minima $\delta^{18}O_{cal}$ values occurred at 300 BCE, 470 CE, 1200 CE and 1500 CE.

Sediment grab samples and aquatic vegetation samples were collected on August 31st, 2015 across a transect of the Pretty Lake basin (Fig. 4; Appendix D). Surficial sediment and vegetation samples were measured for $\delta^{18}O_{cal}$ values. Four samples from the top 5 cm of unconsolidated sediment have values that represent recent lake conditions. Values varied from -4.3 to -3.5‰ VPDB. The other two samples are from aquatic vegetation and have values that represent present day $\delta^{18}O_{cal}$ precipitation. Values were lower than surface sediment values, -5.9 and -6.7‰ VPDB. The overall average for the six samples is -4.7‰ VPDB and a conversion from VPDB to VSMOW shows that $\delta^{18}O_{cal}$ and the oxygen isotopic composition of lake water ($\delta^{18}O_{lw}$) are equal within 0.1‰.

4.5 % Lithics

Lithic measurements show significant variability over the last 2,000 years. Measurements at Pretty Lake averaged 17.2% (n= 226), with a range of 57.5% and minimum of 1.1% and maximum of 58.6% (Fig. 8; Appendix E). The time series for %lithics follows a similar pattern but inversed to the $\delta^{18}O_{cal}$ isotope time series for much of the record.

Above average highs occurred between 470 to 550 CE, 880 to 1250 CE and 1730 CE to present; maxima occur at 1190 to 1195 and 1870 to 1875 CE (Fig. 8). Below average lows occurred between 600 to 800 CE and 1280 to 1720 CE; minima occur at 705 to 710 and 1310 to1315 CE.

The same sediment grab samples collected on August 31st, 2015 were used for modern analysis of %lithics (Appendix E). Seven samples were processed to include all basin environments. The overall average for the modern samples is 21.6% lithics, and has a maximum of 34.2% and minimum of 11.4%. Samples from the littoral region had lower %lithics, averaging 14.2% compared to samples from the deeper part of the basin that averaged 29.1% lithics. This morphological relationship is a gradual gradient, with low %lithics sediment in the littoral regions, gradually increasing to the deeper basin, followed by a decrease in lithics when returning to the shelf.

4.6 Water Isotope Measurements

Water isotope samples collected and plotted together from precipitation in Indianapolis, IN (n = 103), river water samples from the White River and Fall Creek, IN (n = 23), natural lakes, reservoirs and impoundments across Indiana as part of the Indiana Clean Lakes Project (INCLP; n = 449) and from Pretty Lake (n = 16) and Martin Lake (n

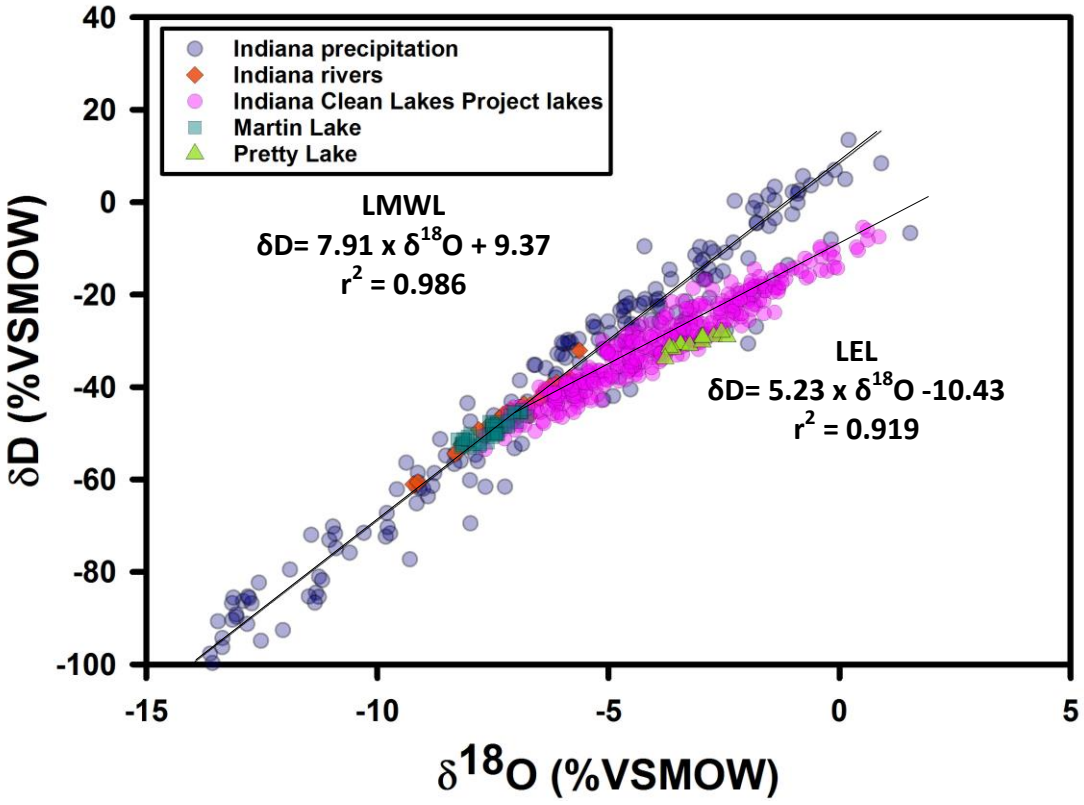

Figure 9. Scatterplot of water samples analyzed at IUPUI. Pretty Lake water column samples are in green triangles, Martin Lake water column samples are in teal squares, Indianapolis river samples in orange diamonds, Indianapolis precipitation samples in blue circles, and Indiana lake samples from the INCLP in pink circles.

= 49). Regression analysis of the data formed a local meteoric water line (LMWL) and a local evaporation line (LEL; Fig. 9). Both of these regressions were highly correlated, with r^2 values of 0.98 and 0.92, respectively. $\delta^{18}O_{precip}$ values ranged from -29.7 to 0.9‰ VSMOW and δD values ranged from -221.8 to 13.5‰ VSMOW. The Indianapolis Rivers and Martin Lake measurements clustered around the intersection of the LMWL and LEL, which also reflects the average isotopic composition of mean annual precipitation, about -8.0‰.

The Indiana lakes measurements form the LEL, with measurements that diverge significantly from the LMWL. The range observed in these values is explained by site specific evaporative environments. Pretty Lake $\delta^{18}O_{lw}$ values are consistently higher than Indianapolis Rivers and Martin Lake measurements and plot mid-way along the LEL. The $\delta^{18}O_{lw}$ Measurements are also comparative to Pretty Lake $\delta^{18}O_{cal}$, following a similar pattern and range as modern $\delta^{18}O_{cal}$ values.

5.0 Discussion

5.1 Pretty Lake Relationship Between $\delta^{18}O_{precip}$, $\delta^{18}O_{lw}$ and $\delta^{18}O_{cal}$

At Pretty Lake, modern sampling of limnological and geochemical data demonstrate a relationship between the oxygen isotopic composition of precipitation ($\delta^{18}O_{precip}$) to lake water ($\delta^{18}O_{lw}$) and authigenic calcite ($\delta^{18}O_{cal}$). The $\delta^{18}O_{precip}$ data have an annual average of -8.34‰. This average compares favorably with model estimates (-8.1‰; Bowen et al., 2005), where global circulation model derives a high-resolution global map of $\delta^{18}O_{precip}$ that can serve as a spatial reference against which $\delta^{18}O_{precip}$ proxy data for paleo-precipitation can be compared. The LMWL has a slope of 7.91 and a y-intercept of 9.37 that is very similar to the global meteoric water line (GMWL; slope = 8.0, y-intercept = 10; Fig. 9; Craig, 1961). The highly variable values of Midwest $\delta^{18}O_{precip,}$ represented by the LMWL, changes according to season and moisture source with generally lower values occurring during the winter months when moisture is sourced from more northwesterly regions and higher values in the spring and summer when precipitation is sourced from southerly regions, including the Gulf of Mexico (Stamps, 2015, Bird et al., in prep). The Indiana river data, sampled from the White River and Fall Creek, has an annual average of -7‰ VSMOW and the Martin Lake data has an average of -7.74‰ VSMOW, both plotting in the middle of the LMWL.

The LEL shows the range of evaporative environments found in Indiana surface waters. Determined by local climate and limnological characteristics, evaporating surface waters have $\delta^{18}O$ and δD values that plot to the right of the LM|WL with a shallower slope (Clark et al., 1997). The LEL intersects the LMWL at (-7.4 $\delta^{18}O$‰, -49.2 δD‰) and has a slope of 5.23; indicative of evaporative systems (Craig et al., 1965). The average of the surface water isotopic composition is notably ^{18}O enriched compared to

regional precipitation, Indianapolis rivers and Martin Lake (-3.96‰; Fig. 9). Pretty Lake's position on the LEL and the average isotopic composition of lake water samples (-3.11‰) indicate midrange evaporative enrichment, supporting Pretty Lake's designation as a hydrologically closed system with extended residence time (i.e. 3 yrs).

Calcite precipitated within Pretty Lake can capture the annual average $\delta^{18}O_{lw}$ of the lake and reflects the oxygen isotope ratio and temperature of the lake water in which it precipitated (Leng et al., 2004). This is shown by using the average of $\delta^{18}O_{lw}$ (-3.11‰) and average warm-season lake surface temperatures (21°C) to predict the oxygen isotopic composition of calcite (-4.6‰) using the equations of Kim and O'Neil (1997), which shows a close correspondence with the measured average of $\delta^{18}O_{cal}$ (-4.7‰) from the transect samples. These empirical observations support a simple oxygen isotope model where $\delta^{18}O_{cal}$ is precipitated in equilibrium with $\delta^{18}O_{lw}$ and reflects the annual average isotopic composition of lake water. In addition, results from the transect samples show that there is spatial coherence in $\delta^{18}O_{cal}$ measurements across the lake. This means that $\delta^{18}O_{cal}$ profile measurements are representative of the entire lake, not just the core site, and can be used to reconstruct past $\delta^{18}O_{lw}$.

5.2 Pretty Lake $\delta^{18}O_{cal}$ and Martin Lake $\delta^{18}O_{cal}$

When Pretty Lake $\delta^{18}O_{lw}$ and down-core $\delta^{18}O_{cal}$ are compared with data from nearby Martin Lake, differences between the two systems illustrate that Pretty Lake $\delta^{18}O$ values are influenced by evaporation in addition to changes in the isotopic composition of precipitation. Located 7 mi west of the study site, Martin Lake is a 17.1 m deep kettle lake with similar limnological properties and climate compared to Pretty Lake (Stamps, 2015, Bird et al., in prep). Martin Lake, however, is a hydraulically open system with a short mean residence time of 103 days (New, 2007) compared to Pretty Lake's longer 3

yr residence time. This is supported by Martin Lake's modern limnological and geochemical data that demonstrate a strong positive relationship between the oxygen isotope ratios of $\delta^{18}O_{precip}$, $\delta^{18}O_{lw}$, and $\delta^{18}O_{cal}$. The average isotopic composition of Martin Lake water is -7.7‰, which is close to regional annual mean $\delta^{18}O_{precip}$ (-8.0‰) (Bird et al., in prep). Because Martin Lake is hydraulically open and plots along the LMWL with Indiana river samples, Martin Lake's water column reflects the average isotopic composition of meteoric waters on a regional scale and is representative of mean annual rainfall (Bird et al., in prep). This is translated to Martin Lake down-core variability in $\delta^{18}O_{cal}$ which represents changes in the relative proportions of summer (Gulf sourced) versus winter (northwest sourced) precipitation, where high (low) $\delta^{18}O_{cal}$ is equated with periods of elevated (decreased) summer precipitation (Stamps, 2015, Bird et al., in prep).

Leng et al. (2006) describes closed-lake P/E systems as having waters with variable oxygen isotope composition and more positive values than regional rainfall due to the sensitivity and balance of hydrologic inputs and outputs. Modern $\delta^{18}O_{lw}$ at Pretty Lake averaged -3.1‰, which is 4.6‰ higher than Martin Lake (-7.7‰). Pretty Lake surface waters also plot mid-way along the LEL whereas Martin Lake plots at the intersection of the LMWL and LEL, illustrating their distinct hydrologies (Fig. 8). Both lakes have similar $\delta^{18}O_{lw}$ patterns; however variability can represent different controls on each system. The LEL and Pretty Lake variability represents more humid or more arid climate by changes in evaporative loss while the LMWL and Martin Lake variability represents differences in seasonally sourced precipitation (Bird et al., in prep).

The equilibrium between $\delta^{18}O_{lw}$ and $\delta^{18}O_{cal}$ at Pretty Lake suggests that the patterns and variability in down core $\delta^{18}O_{cal}$ measurements also reflect the combined influences of changes in $\delta^{18}O_{precip}$ and evaporation. This is demonstrated by Pretty Lake having a higher average (-5.9‰) and larger range (13.9‰) in $\delta^{18}O_{cal}$ values compared to Martin Lake $\delta^{18}O_{cal}$ (-10.7‰ and 10.2‰ respectively; Bird et al., in prep). Patterns that constitute a P/E sensitive system are consistent with characteristic of Pretty Lake $\delta^{18}O$ values and are more pronounced by comparison with Martin Lake.

The Pretty Lake $\delta^{18}O_{cal}$ record has distinct periods of sustained high values and sharp transitions to low values at different times than the Martin lake record (Fig. 10). This type of abrupt variability suggests that transitions between evaporative and less evaporative environments is highly sensitive to seasonal climate change but may also be a construct of basin morphology. The periods of plateaued high $\delta^{18}O_{cal}$ values, representing an evaporative limit, occur between 200 BCE to 400 CE, 600 to 900 CE and 1600 CE to present. The Pretty Lake $\delta^{18}O_{cal}$ high values appear to have an upper limit of evaporative enrichment, hovering approximately between -4.0 and -3.0‰, suggesting there is a limit to the $\delta^{18}O_{cal}$ proxy's ability to record higher evaporative conditions (Gat et al., 1991). Dramatic, sharp low values occur during periods 400 to 600 CE and 900 to 1600 CE but with considerable variability during the latter period. Variability, the isotopic changes in the record represent a range of hydrologic responses to lake-specific variations in the magnitude and duration of evaporation. Changes in the isotopic composition of precipitation related to variations in its source are also imbedded in the Pretty Lake record, however, and need to be removed in order to investigate changes in local evaporation.

5.3 $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ evaporation record

Both the Pretty and Martin Lake sedimentary records have comparable chronologies, sedimentation, and sampling resolution to document hydrocilmate variability at decade-to multi-decadal timescales (Appendix F). In the small basins discussed here, the physical processes that control lake-catchment hydrology and isotope dynamics on decadal timescales also likely controlled lake dynamics on century-long timescales (Steinman et al., 2010a, Steinman et al., 2010b). Because the Martin Lake $\delta^{18}O$ record captures changes in the isotopic composition of regional precipitation, it can be used to remove these trends from the Pretty Lake record, thereby isolating evaporative effects on $\delta^{18}O_{lw}$.

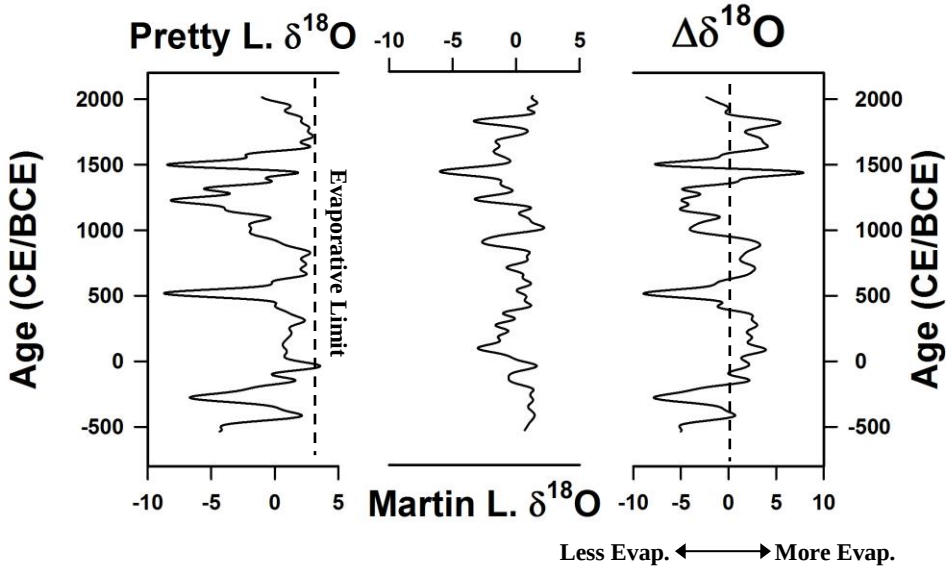

Figure 10. From left to right the figure shows zero-mean, interpolated Pretty and Martin Lake $\delta^{18}O$ data. The interpolated data is on the same time series from 560 BCE to 2014 CE with a 10-year resolution. The last graph is $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ results.

Variations in $\delta^{18}O_{precip}$, due to changes in the source and seasonality of precipitation, are removed by subtracting the Martin Lake $\delta^{18}O_{cal}$ record from the Pretty Lake $\delta^{18}O_{cal}$ record after normalizing each data set to a 0 mean, interpolating them at 10

yr intervals and filtering them with a 30-year low-band pass Butterworth filter in MATLAB (Anderson et al., 2007, Anderson, 2011, Steinman et al., 2012).

The residual reflects evaporation isotopic changes unrelated to $\delta^{18}O_{precip}$, having effectively isolated the isotopic influence of hydrologic meteoric forcing on the Pretty Lake catchment system (Fig. 10). Higher $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values represent less effective moisture by way of more evaporation and lower values represent more effective moisture with less evaporation. Between 570 BCE to 2014 CE, $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values averaged -0.25‰ VPDB with a range of 16.5‰ and a standard deviation of 3.3‰. The maximum was 7.6‰ and the minimum was -8.9‰. Like the Pretty Lake $\delta^{18}O_{cal}$ record, transitions between highs and lows are very abrupt; supporting that evaporation is sensitive to climate change. Periods of sustained high values, inferring prolonged evaporation, occurred between 200 BCE to 400 CE, 600 to 900 CE and 1350 to 1700 CE. The maximum occurs between 1445 to 1455 CE, at the peak of the latest mega-drought period, with other maxima occurring between 95 to 105, 895 to 905 and 1825 to 1835 CE. Similar to the Pretty Lake $\delta^{18}O$ record, reflected in the plateau like structures is an evaporative enrichment limit (2.0 to 4.0‰) that Pretty Lake can experience. Periods of low values, suggesting less evaporation, occurred between 400 to 600 CE, 900 to 1350 CE and 1700 to present. Minima occur between 280 to 285 BCE, 510 to 525 and 1495 to 1500 CE.

The relationship between Martin Lake's $\delta^{18}O_{cal}$ and $\delta^{13}C_{cal}$ with Pretty Lake's $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ suggests there is a correlation between seasonally sourced precipitation, duration of warm season and local evaporation in the Midwest. Low $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values correspond to high values in Martin $\delta^{18}O_{cal}$ and $\delta^{13}C_{cal}$; and $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ high

values correspond to low Martin $\delta^{18}O_{cal}$ and $\delta^{13}C_{cal}$ values. This suggests that when there is less evaporation, precipitation mostly occurs during the warm season and is sourced from the Gulf; and when there is more evaporation, precipitation mostly occurs outside the warm season and is sourced from the northwest (Bird et al., in prep).

5.4 Effects of Seasonality on $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ Evaporation

Annual variations in lake evaporation are controlled by precipitation, temperature, wind speed and relative humidity during the ice-free season (Clark et al., 1997). The decadal to multi-decadal evaporation patterns indicated by the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record suggests that variations in some, or all, of these climatic parameters occurred abruptly and persisted for sustained intervals in the past.

In mid-latitude cold seasons, reduced ambient and water temperatures allow a layer of ice to form covering the surface of Pretty Lake, typically between December and March. Temporary restriction of inputs (direct precipitation and overland flow) and outputs (evaporation) effectively isolates the system. For these reasons, climatic variability during the time that the lake is ice-free largely controls the changes in $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ (i.e., evaporation). However, changes in the duration of ice cover likely played an important role in Pretty Lake's net evaporation because prolonged and early ice cover during short, cold, dry seasons could effectively reduce evaporation despite warm season aridity by shortening the time available for evaporation. Short but wet warm-seasons during periods of extended ice cover would further reduce evaporation by creating humid conditions for much of the time during which the lake is ice-free. Conversely, shortened cold-seasons and lengthened warm-seasons could act to enhance evaporation by increasing the amount of time the lake's surface water was open to the atmosphere and subject to evaporation. Even in warm-seasons with average precipitation,

an extended ice-free season would enhance annual evaporation by increasing the overall period during which evaporation occurs.

Changes in the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ inferred evaporation record can be explained by a range of climatic scenarios. Low $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values are interpreted by a combination of scenarios that collectively reduce evaporative conditions. For example, consistent precipitation or higher relative humidity throughout the warm season, likely sourced from warm, humid air of tropical origin would lower evaporation and $\Delta\delta^{18}O_{Pretty\text{-}Martin}$. This scenario closely follows the understanding of Indiana warm-season climate (Andresen et al., 2012). A combination of consistent warm-season precipitation and extended ice-cover by longer/colder winters could also decrease warm-season evaporation, represented by lower $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values. Lastly, an extension of cold-season ice-cover could reduce the timing of exposed lake surface waters, limiting the duration of atmospheric effects and the ability to record evaporation.

High $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values may also reflect a combination of scenarios that altogether increase evaporative conditions. High $\Delta\delta^{18}O_{Pretty\text{-}Martin,}$ indicating increased evaporation, may result from an extension of cold-season-like climate with persistent dry, northwest-polar air resulting in an overall reduction of warm-season precipitation and increased evaporation. High $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values could also result from variations in the magnitude and timing of the warm-season and/or fewer warm-season precipitation events. If large amounts of precipitation fall in the early or late warm-season, precipitation may not be distributed adequately throughout the warm-season to limit evaporation. If these events are followed or preceded by prolonged ice-free conditions, evaporation could occur over longer periods, increasing $\Delta\delta^{18}O_{Pretty\text{-}Martin}$. Lastly,

$\Delta\delta^{18}O_{Pretty\text{-}Martin}$ could increases even during extended cold-seasons with persistent ice cover (reduced evaporation) if warm-season drought was especially severe.

In order to differentiate between the positive $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and negative $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ scenarios described above, we interpret down-core variability in $\Delta\delta^{18}O_{Pretty\text{-}Martin}$, in the context Martin Lake $\delta^{13}C_{cal}$ and $\delta^{18}O_{cal}$. In thermally stratified Midwestern lakes, like Martin, ^{12}C enriched organic matter is exported from the epilimnion to the hypolimnion, where it is sequestered for as long as thermal stratification is maintained. Increased sequenstration increases $\delta^{13}C$ in the epilimnion, resulting in high $\delta^{13}C_{cal}$ values that align with high $\delta^{18}O_{cal}$ values. This relationship occurs in the Martin Lake system because warm-season $\delta^{18}O_{precip}$ is sourced from high $\delta^{18}O$ warm southerly moisture sources, with air mass temperatures that can contribute to sustained thermal stratification. The opposite occurs when the warm-season is shorter and/or cooler, more

mixing occurs, and moisture is sourced from northerly regions. High $\delta^{13}C$ and $\delta^{18}O$ at Martin Lake therefore reflects the duration of the warm season and moisture source; where increased $\delta^{13}C$ and $\delta^{18}O$ reflect an extended warm-season with southerly moisture and lower $\delta^{13}C$ and $\delta^{18}O$ reflect a shorter warm-season with more northerly sourced moisture. Both $\delta^{13}C$ and $\delta^{18}O$ increase during extended warm season conditions. With the additional information from Martin Lake, it becomes possible to evaluate the $\Delta\delta^{18}O_{Pretty-Martin}$ record in the context of changes in warm-season conditions (i.e., temperature) and atmospheric circulation (moisture source), which affect lake temperature and local precipitation and humidity

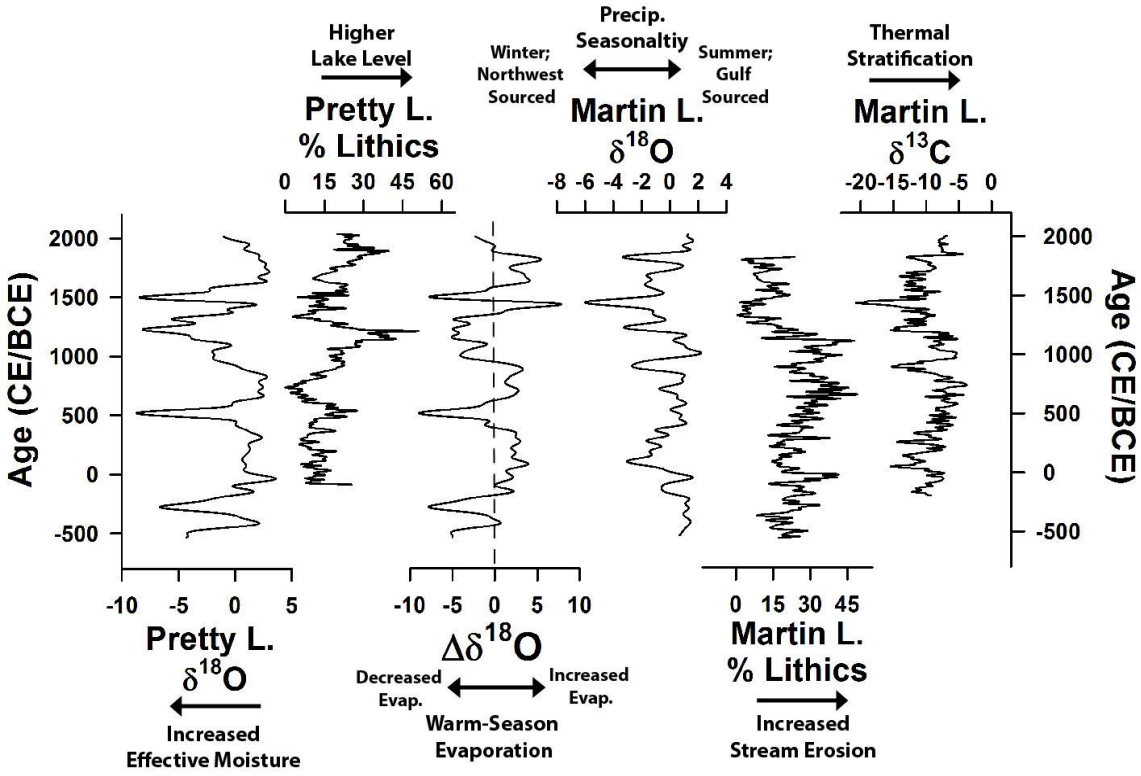

Figure 11. All data is interpolated on a 10 year interval. From left to right; Pretty L. $\delta^{18}O$ data, Pretty Lake %lithics, $\Delta\delta^{18}O$ record, Martin Lake $\delta^{18}O$ data, Martin Lake %lithics and Martin Lake $\delta^{13}C$.

5.4.1 500 BCE to 600 CE

Persistent high $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values occurred between 250 BCE to 400 CE, marking the longest Midwest drought in 2500 years (Fig. 11). At the time of the mega-drought period, Martin Lake $\delta^{18}O_{cal}$ shows precipitation being sourced from the northwest; and because $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ show more evaporation during the warm season, it is likely that precipitation occurred outside of the warm season. Martin Lake $\delta^{13}C_{cal}$ agree with the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record, showing times of shorter lake stratification, both illustrating more arid conditions with shorter warm seasons and sustained evaporation.

Bordering this 650 yr mega-drought are two periods of less evaporative conditions from 500 to 250 BCE and 400 to 600 CE. During these periods the Martin Lake $\delta^{18}O_{Martin}$ record indicates moisture was sourced from the Gulf regions during the warm season. These conditions are consistent with reduced evaporation at Pretty Lake indicated by $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ (Fig. 11). During these periods there is extended warm season stratification indicated by $\delta^{13}C_{cal}$ at Martin Lake. The combination of records confirm that the two periods of extended warm seasons experienced similar scenarios of less arid conditions, suggesting intense evaporative conditions were suppressed by a combination of precipitation occurring regularly throughout the season and higher relative humidity.

5.4.2 600 to 900 CE

From 600 to 900 CE, Martin Lake shows slightly lower $\delta^{18}O_{cal}$ compared to the previous pluvial period suggesting more precipitation is sourced from the northwest (Fig. 11). This origin of precipitation is more likely to occur outside of the warm season. At the same time Pretty Lake the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ shows increased evaporation; together, the

sustained lower $\delta^{18}O_{cal}$ from Martin Lake and evaporative conditions at Pretty Lake suggests precipitation occurred outside the warm season prompting arid warm seasons. However, at Martin Lake, lake stratification peaks at record maxima's between 600 and 700 CE but declined to minimums by 900 CE indicating initial extended warm seasons and shorter warm seasons at towards the end of the period. The Pretty and Martin Lake records in combination suggest relatively longer, arid warm seasons, enhancing local evaporative conditions. By the end of this period, records align to show a brief interval (800 to 900 CE) of sustained evaporative but shorter warm season conditions.

5.4.3 900 to 1350 CE

Between 900 and 1350 CE both Pretty Lake and Martin Lake records align in a similar manner to the previous pluvial intervals at 500 to 250 BCE and 400 to 600 CE (Fig. 11). As suggested by the $\delta^{18}O_{cal}$ from Martin Lake, a steady supply of Gulf sourced precipitation fell during the warm season. Consistent migration of humid air and precipitation from the Gulf into the Midwest during the warm-season would decrease the effects of evaporation over Pretty Lake as confirmed by the negative $\Delta\delta^{18}O_{Pretty\text{-}Martin}$. There is a shift from shorter to longer warm seasons from the previous 300 years confirmed by longer lake stratification at Martin Lake. Warm-season conditions persist in both lake records during this time, marking the longest and most stable period of less arid warm-season conditions.

5.4.4 1350 to 1700 CE and Present

At 1350 CE there was an abrupt shift from wet, warm-season conditions to a drier warm-season climate that persisted until 1700 CE (Fig. 11). This is reflected by enhanced evaporation (high $\Delta\delta^{18}O_{Pretty\text{-}Martin)}$ at Pretty Lake, which is consistent with inferred

reductions in Gulf sourced, warm-season precipitation at Martin Lake suggested by the low $\delta^{18}O_{cal}$. A brief interval between 1500 and 1600 CE shows a sharp drop in evaporation, which is consistent with a minor increase in warm-season precipitation at Martin Lake indicated by a moderate increase in %lithics.

Between 1350 and 1700 CE, both the Pretty and Martin records suggest shorter, drier warm seasons. Increased evaporation during this period likely resulted from reduced summer precipitation despite persistent ice-cover from longer/colder winters that would have served to reduce evaporation. The decrease in evaporation during the interval from 1500 to 1600 CE may be due to a combination of longer cold-season, extended ice-cover and higher relative humidity, increasing effective moisture in the local atmosphere, both limiting evaporation over the lake. Overall, we interpret the period from 1350 to 1700 as a multi-century Midwest mega-drought during the LIA. This agrees with the established climate and chronology for the LIA through previous Midwest studies and global model estimates (Laird et al., 1996, Mann et al., 1999, Cook et al., 2004, Bird et al., in prep). Following 1700 CE all proxy values begin to indicate a switch from shorter, drier warm-seasons to those more representative of the modern climate.

5.5 Pretty Lake %Lithics

In lacustrine depositional settings the abundance of lithic material reflects the relative contribution of clastic material to the sediment fraction; however, various processes can influence this proxy and each deposition setting needs to be evaluated. At Pretty Lake the flux of lithics closely follows %lithics suggesting that the latter captures changes in the delivery of abundance of clastic material to the deposition site. The watershed's low topographic relief hinders high-energy surface runoff and there are no

permanent fluvial systems in the Pretty Lake watershed. The most established channel, Deal's Ditch, is ephemeral and only activated during periods when there is sufficient runoff from precipitation to erode the stream's channel (Fig. 3; New, 2007). Rainfall driven by large and intense precipitation events, is therefore hypothesized to drive stream channel erosion and control the delivery of lithic material to the core site (Conroy et al., 2008, Andresen et al., 2012).Because Pretty Lake is situated in a climatic region that receives its greatest precipitation during the warm season (Fig. 2) and cold-season temperatures cause ice-cover over Pretty Lake, reducing the delivery of fluvially derived sediment, we propose that lithic material is dominantly delivered to the lake during warm, ice-free seasons.

This seasonal interpretation was also suggested for % lithics measured at nearby Martin Lake, however comparison of the Pretty Lake and Martin Lake lithic records show important differences that suggests additional factors) may have influenced lithic input to Pretty Lake. Martin Lake is a hydraulically open system with a larger watershed (watershed: lake area, 125:1) and a simple steep-sided and deep-centered basin with channel flow directed from east to west across the basin length (Stamps, 2015, Bird et al., in prep). These simple morphological characteristics of Martin Lake allow consistent spatial deposition of lithics across the basin, reducing the focus of interpreting %lithics on external basin factors. At Martin Lake, %lithics is interpreted as being driven by watershed and stream channel erosion caused by Midwest summer precipitation and summer storm events. Increases in %lithics are representative of a surge in stream channel erosion, lithic transport and deposition generated by increased summer precipitation intensity and amount (Stamps, 2015, Bird et al., in prep).

In contrast, Pretty Lake's hydraulically closed basin is more complex with a deep center surrounded by a shallow littoral shelf perimeter. Inflow and outflow channels are positioned in close proximity of each other in the northeast corner of the basin, which is the region with the largest shelf area and a shallow central basin (~6 m; Fig. 4). A 1 m deep shelf surrounds the basin; and at times of low-lake level (~1 m below modern levels) this smaller basin may be partially or entirely isolated from the deep basin. Because both inflow and outflow channels are confined to this region, the small basin becomes the primary sediment deposition site, trapping or rerouting sediment flow and effectively limiting the amount of sediment transport to the coring site. During times of low lake level we suggest that Pretty Lake %lithics are a function of climatic forcing modulated by internal basin morphological properties concentrated in the northeast basin shelf. However, at times of high-lake level, sediments could bypass the submerged 1 m shelf and be deposited in the deep basin by remaining in suspension instead of being impounded on an exposed littoral shelf. During high lake levels, fluctuations in %lithics is hypothesized to represent precipitation intensity, more similar to Martin Lake %lithics, where the total amount of summer rainfall, which is driven by large storm events, drives stream channel erosion and controls the delivery of lithic material to the core site (Conroy et al., 2008). The Pretty Lake closed basin's long residence time renders it sensitive to the balance of inputs (i.e. precipitation, runoff) and outputs (i.e. evaporation); a mechanism that can be translated to interpret changes in lake level from %lithics. With this framework, we interpret increases (decreases) in %lithics to represent increased (decreased) lake levels.

Lake level is a consequence of the amount of precipitation collected by the lake relative to evaporative conditions; and because evaporation is the primary pathway by which moisture is removed from Pretty Lake there is a strong correspondence between $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and %lithics. The strong relationship between $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and %lithics show that high values in $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ corresponds to low %lithics; and low $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values corresponds to high %lithics. This is congruent with increased evaporation (high $\Delta\delta^{18}O_{Pretty\text{-}Martin}$) lowering lake levels and exposing the littoral shelf; thereby rerouting flow and/or creating a deposition setting in the northeast basin, restricting lithic deposition in the deep basin (low %lithics). Conversely high-lake levels (high %lithics) when evaporation was reduced (low $\Delta\delta^{18}O_{Pretty\text{-}Martin}$) would have promoted lithic transport to the deep basin and capturing variable precipitation intensity with continuous lithic deposition.

5.5.1 500 BCE to 600 CE

Between 250 BCE to 400 CE drought-like conditions with shorter, drier warm seasons and sustained evaporation are represented by Pretty Lake $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and Martin Lake $\delta^{18}O_{cal}$ and $\delta^{13}C_{cal}$ records. Both Pretty Lake and Martin Lake %lithics are consistent with this interpretation, showing lower lake levels and less stream erosion, suggesting precipitation occurred outside of the warm season (Fig. 11).

Less evaporative conditions between 500 to 250 BCE and 400 to 600 CE are in agreement with higher lake-levels at Pretty Lake and a steady increase in stream erosion at Martin Lake that continues past 600 CE (Fig. 11). The extended warm seasons of sustained pluvial conditions suggests intense evaporative conditions were suppressed by

precipitation occurring regularly throughout the season along with higher relative humidity.

5.5.2 600 to 900 CE

From 600 to 900 CE %lithics from Pretty Lake show lower lake-levels during this interval, however, at Martin Lake, stream erosion peaks at record maxima's between 600 and 700 CE and declines to a minimum by 900 CE indicating intense precipitation during extended warm seasons (Fig. 11). The discrepancies between the records demonstrate that additional internal mechanisms are controlling lithic deposition at Pretty Lake. The Pretty and Martin Lake records in combination suggest precipitation may have occurred outside of relatively longer warm seasons prompting arid conditions; and precipitation that did occur during the warm season was likely reduced. One possibility is that late fall or cold-season rain events were more frequent. In this scenario, relatively dry and extended warm seasons would enhance evaporation at Pretty Lake that would be captured in calcite precipitated during this season. Enhanced precipitation following the warm-season, and after the primary period of calcite formation, would still result in watershed erosion at an ice-free Martin Lake while not reducing apparent evaporation at Pretty Lake.

5.5.3 900 to 1350 CE

Pluvial conditions occur between 900 and 1350 CE where Pretty Lake %lithics suggest higher lake-levels (Fig. 11). The shift from drier to wetter warm-seasons relative to the previous 300 years is consistent with increased stream erosion at Martin Lake. Warm-season conditions with evenly distributed Gulf precipitation, effectively reducing the impact of intense evaporation, likely persisted during this time, marking the longest

and most stable period of pluvial warm-season conditions. The %lithics records from Pretty and Martin Lake compare favorably through the MCA with higher lake levels at Pretty Lake corresponding with increases in stream erosion and precipitation intensity at Martin Lake, and are consistent with the Pretty Lake $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and Martin Lake $\delta^{18}O_{cal}$ and $\delta^{13}C_{cal}$ records (Fig. 11).

5.5.4 1350 to 1700 CE and Present

The period from 1350 to 1700 CE shows shorter warm seasons with enhanced evaporative conditions. This is consistent with lower lake-levels (low %lithics) at Pretty Lake and reduced stream channel erosion from intense precipitation at Martin Lake. A brief interval between 1500 and 1600 CE shows a rise in lake-levels at Pretty Lake that matches the sharp drop in evaporation. This reversal is not supported in the Martin Lake $\delta^{18}O_{cal}$ record but is represented in the Martin Lake %lithics record, suggesting an increase in northerly sourced storm events and precipitation during the warm-season; causing reduced evaporation, higher lake levels and increased stream erosion. Besides this unique interval, we interpret the period from 1350 to 1700 as a multi-century Midwest mega-drought during the LIA with the %lithics records from each lake in agreement during most of the period (Fig. 11), with decreases in stream erosion and precipitation intensity at Martin Lake corresponding to lower lake levels at Pretty Lake. This fits the established climate and chronology for the LIA through previous Midwest studies and global model estimates (Laird et al., 1996, Mann et al., 1999, Cook et al., 2004, Bird et al., in prep). Following 1700 CE all proxy values begin to indicate a switch from weakened warm-seasons to those more representative of the modern climate.

5.6 North American Regional Hydroclimate

At a regional scale, the Pretty Lake record of late Holocene local evaporation shares slight similarities with other hemispheric and continental hydroclimate records (Fig. 12). Pretty Lake record is in agreement at certain intervals with two bog records, which represent the depth of the water table, from Minden Bog, Michigan, and Hole Bog, Minnesota (Booth et al., 2003, Booth et al., 2006). When Minden Bog and Hole Bog had low water tables, there were also lower lake levels at Pretty Lake and climate appears drier during warm-seasons (Fig. 12). This is particularly true in the bog records during the interval from 0 to 1200 CE for the two bog records, at which time values started low, coinciding with the longest period of increased evaporative conditions we see at Pretty Lake and the second evaporative period preceding the MCA. During the period from 1350 to 1700 CE, which encompasses the LIA, Hole Bog has a hiatus, representing an extremely low water table, and Pretty Lake experiences severe drought-like conditions; maximum evaporation and persisting low lake levels. Martin Lake has the lowest values for all three proxies, indicating widespread arid and cooler conditions, also showing agreement with Minden and Hole Bog. Together, the regional records indicate intervals of warm season's that were highly evaporative and received little precipitation, indicating evaporative conditions across the Midwest. The slight differences in variability in the Pretty Lake evaporation record and the Midwest bog records provides evidence that there are other local factors that work together to influence evaporation within these mean climate states. An example of this nuance variability occurs during the interval between 1500 to 1600 CE, where Pretty Lake shows reduced evaporation during the otherwise arid LIA period that is not reflected in the Midwest bog records.

Further west, Pretty Lake shows out-of-phase relationships with a High Plains hydroclimate record highlighting a geographical climatic dipole between the High Plains and Midwest regions, but also the local specificities of an evaporation record (Fig. 12). In North Dakota, a diatom record of salinity changes from Moon Lake shows primarily arid conditions during the period from 1000 to 1200 CE, when Pretty Lake has an abrupt shift to wet, warm-season conditions of the MCA. From 1200 to 1600 CE, the Moon Lake salinity record indicates a wet period by reduced salinity concentrations, and both Pretty Lake and Martin Lake experience drier conditions during the LIA (Laird et al., 1996).

Tree-ring chronologies from 14 high-elevation and middle-to-high latitude sites distributed over a large part of the Northern Hemisphere (NH) extratropics preserve coherent large-scale, multicentennial temperature trends (Fig. 12; Esper et al., 2002). The low frequency signals reconstruct the full range of temperature variability over the past

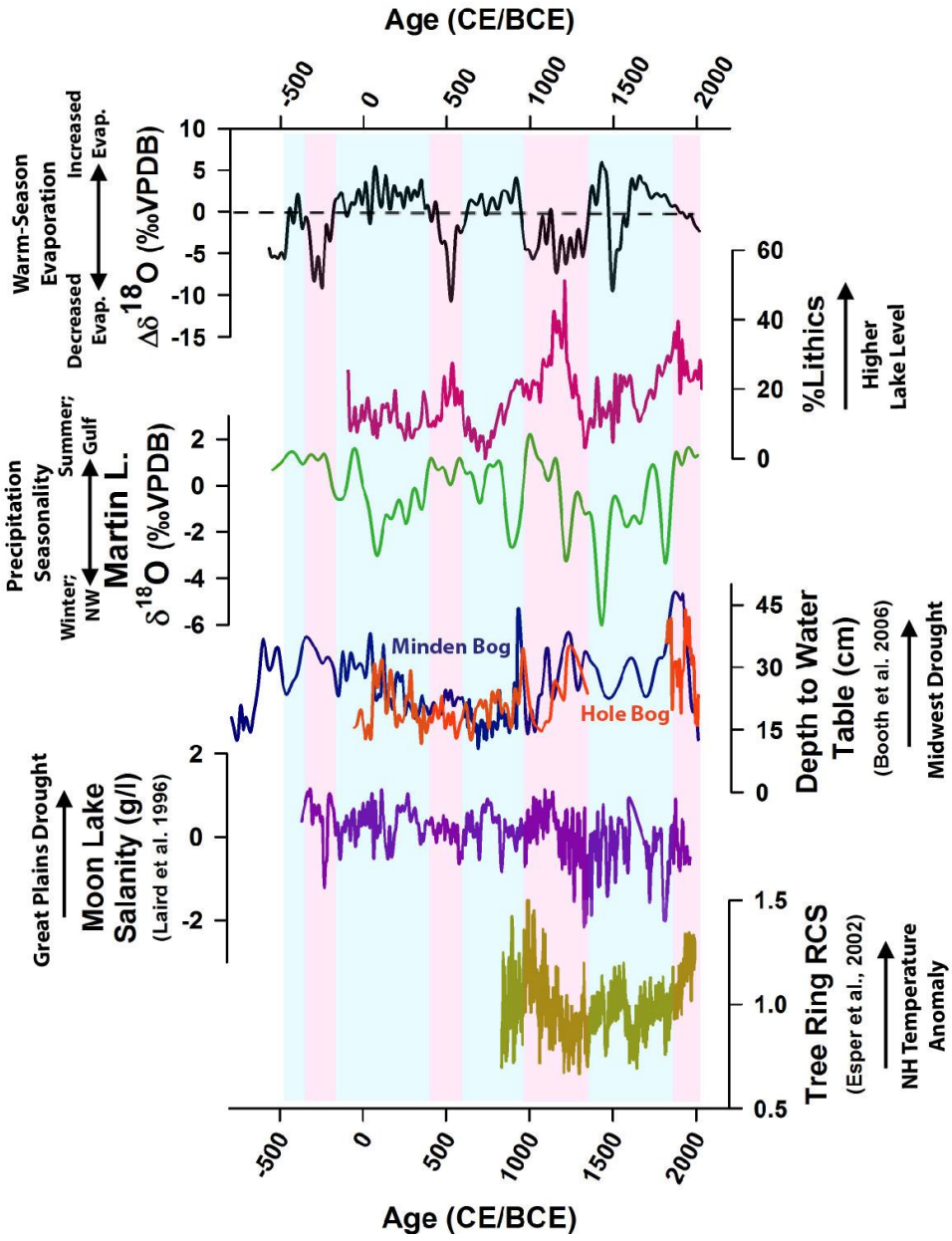

Figure 12. $\Delta\delta^{18}O_{Pretty\text{-}Martin}$, Pretty Lake %lithics and Martin $\delta^{18}O$ records paired with other Paleoclimate records. From top to bottom the records are from Booth et al. (2006) with Minden in blue and Hole in orange; Laird et al. (1996) in purple with data shown as std. from mean; Esper et al. (2002) in gold showing warm season temperature anomalies.

1000 years. There is a peak in the record at 1000 CE supporting the large-scale occurrence of the MCA, and contemporary with the wet, warm-season conditions at Pretty Lake and Martin Lake (Esper et al., 2002). From there, temperatures drop to cooler conditions which partially aligns with a time of elevated evaporation at Pretty Lake, and reduced Gulf sourced precipitation from Martin Lake, indicating weakened warm-seasons in the Midwest that we interpret as the LIA. The relationships suggest a common, large-scale northern hemisphere forcing mechanism that has manipulated P/E conditions, thereby shaping the extent and magnitude of warm season evaporation patterns at least in the Midwest.

5.7 Drivers of Midwest hydroclimate

The Midwest is an area that is geographically sensitive to changes in Pacific Ocean-atmosphere dynamics (Leathers et al., 1991). Heat distribution patterns in the Pacific Ocean, and its interactions with atmospheric dynamics are driven by radiative heating and cooling across the tropical Pacific (Clement et al., 1996). Negative radiative forcing (i.e. cooling) has been shows to illicit an El Niño-like (positive ENSO) whereas positive radiative forcing (i.e. warming) promotes La Niña-like conditions (negative ENSO). These changes in ENSO are linked to North Pacific SSTs (PDO) and ocean-atmosphere dynamics and cause enhanced interactions of the PNA (Liu et al., 2014). Coupled, the PNA and PFJS, are the leading modes of climate variability over the continental US (Coleman et al., 2003, Liu et al., 2014) and bridge tropical and extratropical Pacific heat distribution (Cai et al., 2001).

Warm-season evaporation from Pretty Lake shows strong similarities to North Pacific SSTs and Northern Hemisphere (NH) temperature anomalies over the last 1,000 years (Fig. 13). The record of North Pacific SSTs is driven by the Pacific Decadal

Oscillation (PDO) and correlated to the PNA (Mann et al., 2009). The period between 900 and 1100 CE reveals mostly high North Pacific SSTs which is in general agreement with decreased evaporation from the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record, similar to modern conditions. After this, North Pacific SSTs drop slightly but still remain high into the termination of the MCA period, following a general trend with higher $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values, suggesting less evaporative conditions during this period. Northern Pacific SSTs

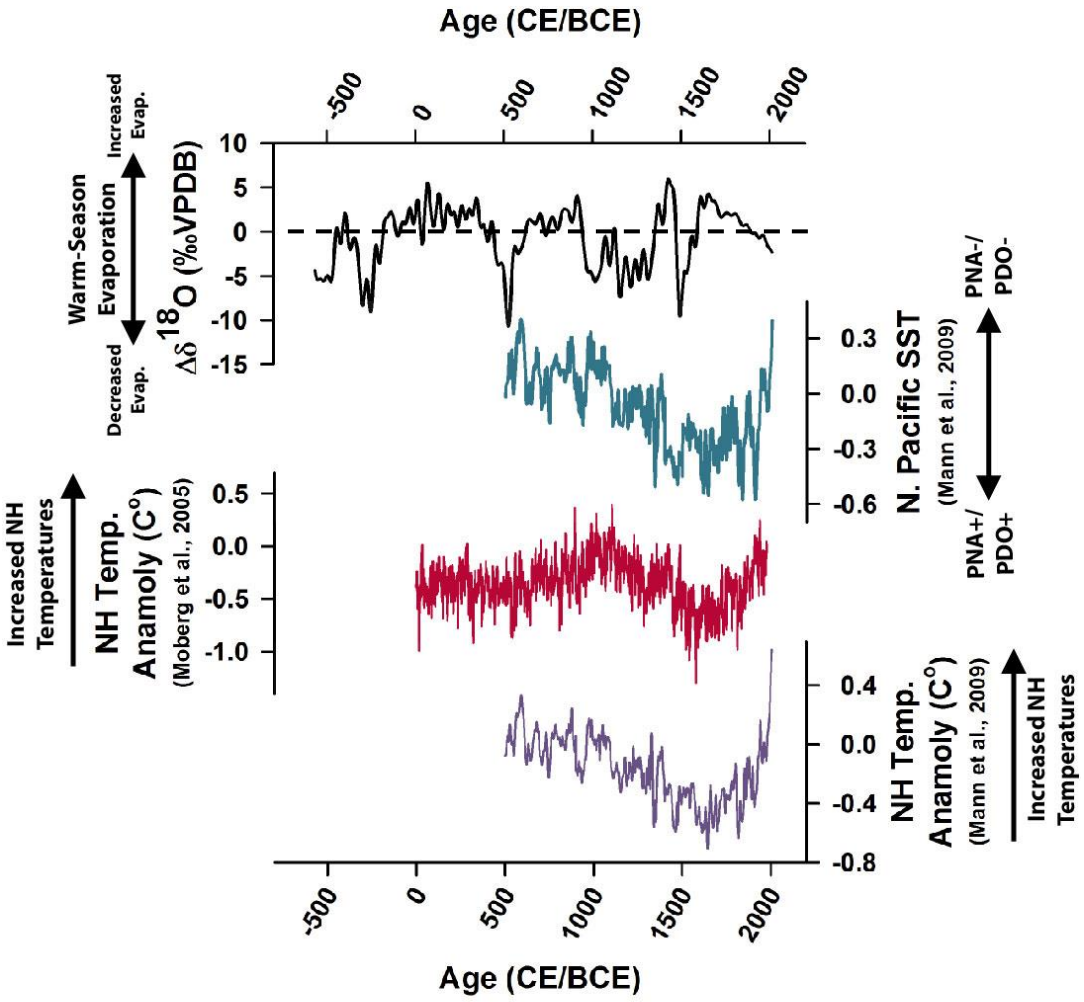

Figure 13. Graph showing global climate drivers and $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record. Below the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record is a reconstructed North Pacific SSTs from Mann et al. (2009), and two Northern Hemisphere temperature anomaly reconstruction records from Moberg et al. and Mann et al. (2005, 2009).

begin to steadily decrease around 1450 CE, timely overlapping with a sharp reversal in the $\Delta\delta^{18}O$ record that indicates the most recent mega-drought. During the current warm period North Pacific SSTs are warm (La Niña or -PDO), the PNA has tended towards a negative phase and the Midwest has been generally wetter, while the western United States has been drier (Mann et al., 2009). Modern Pretty Lake $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ values are low, suggesting less evaporation, and compare favorably with the current understanding of the PNA's phase, supporting a relationship between Pacific SSTs and Midwest P/E.

The Pretty Lake evaporation record reflects local conditions within larger scale general patterns of Pacific Ocean heat distribution/ocean-atmosphere dynamics, showing a correlation exists between continental North American hydro-climate and mean state changes of the PNA and North Pacific SSTs. Other small inconsistencies between the North Pacific SSTs record and the Pretty Lake record may be attributed to the strong winter (DJF) correlation between the Midwest and PNA, where Pretty Lake proxies are representative of warm-seasons (JJA).

The $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record also shows similarities and few differences with a multi-centennial variability reconstruction of NH temperatures (Fig. 13; Mann et al., 1999, Moberg et al., 2005). By combining low and high-frequency (i.e. low resolution proxies and tree ring proxies respectively) the Moberg et al. (2005) record captures a wide range of centennial Northern Hemisphere temperature variability. The general trend of Northern Hemisphere temperature shows a high temperatures from 1000 to 1100 CE, contemporary with decreased evaporation in the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record at the start of the MCA (Moberg et al., 2005). The temperature reconstruction also reveals minimum temperatures, about 0.7 °C below the average, around 1600 CE. This is chronologically

close to the increase in evaporation at Pretty Lake that we interpret as the LIA. Comparatively, the Mann et al. (2009) Northern Hemisphere temperature anomaly record shows discrepancies between the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ record and temperature. Prior to the MCA, temperatures begin anomalously high where Pretty Lake evaporation is higher, indicative of less warm season precipitation. During this period, the Pretty Lake record's agreement with the Moberg et al. (2005) record and their difference between the Mann et al. (2009) record could be due to seasonal distinctions of each record. The last 1000 yrs are consistent with higher temperatures during the MCA and lower temperatures during the LIA, showing temperature variability in Midwest climate that is consistent with phase patterns of the PNA/PDO (Mann et al., 2009) and compare favorably with Pretty Lake climatic interpretations for these periods.

However, the greater similarities between the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and the Moberg et al. (2005) record compared to both the Mann et al. (2009) records, could be attributed to the seasonal nature of the high-frequency tree ring proxies incorporated in the northern hemisphere temperature reconstruction (Moberg et al., 2005). Growth rates in drought sensitive trees are primarily captured during the warm growing season, thus seasonally similar to the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ evaporation captured during the warm-season at Pretty Lake.

Overall, it appears that late Holocene climate changes at Pretty Lake, and across much of the continental United States, were similarly paced with mean state changes in the Pacific ocean-atmosphere system and northern hemisphere temperatures. Variability in Midwest climate expression is fairly consistent with phase patterns of PNA at multi-

decadal resolution and northern hemisphere temperatures at multi-centennial resolution. This suggests that Midwest climate is linked to Pacific ocean-atmosphere processes.

6.0 Summary and Conclusions

The multi-proxy record from Pretty Lake, IN provides a decadally resolved view of Late Holocene evaporation in the Midwest, adding a persepective of P/E seasonal changes to the Martin Lake records. The relationship between Pretty Lake $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ and %lithics with Martin Lake $\delta^{18}O_{cal}$, $\delta^{13}O_{cal}$ and %lithics suggests there is a correlation between seasonally sourced precipitation and local evaporation in the Midwest. Changes in the $\Delta\delta^{18}O_{Pretty\text{-}Martin}$ allign with the Midwest local and regional records in distinct patterns, revealing that the Midwest has experienced a wide range of evaporative and pluvial regimes over the last 2500 years: (1) Multiple early periods of much drier, and weakened warm-season conditions dominating the period from 600 BCE to 900 CE, including the longest arid period in the record from 250 BCE to 400 CE. (2) A prolonged period of enhanced warm season pluvial conditions, with less evaporation and higher lake levels, during the MCA period (900 to 1350 CE) (3) A pronounced century of increased evaporative conditions throughout the LIA (1350 to 1700 CE) followed by a gradual decrease in evaporation and rising lake levels starting at 1700 CE and continuing to present. The Pretty Lake proxy record shows remarkable similarities to other Midwestern paleoclimate records that record periods of prolonged arid conditions. It is also out-of-phase with records from the High Plains, suggesting a climatic dipole between the Midwest and western United States. Within Pretty Lake's local evaporation signal, larger and longer scale variability appears to respond to changes in Pacific Ocean SSTs and shows a relationship to Northern Hemisphere temperature anamolies, suggesting a strong link between Pacific Ocean-atmosphere dynamics.

The results presented here suggest that the Midwest is susceptible to mega-droughts, experiencing at least three multi-decadal periods of heightened evaporation within the last 2500 years. At present, the west coast is experiencing crippling drought and ocean-atmospheric dynamics suggest the Midwest will continue to experience enhanced warm-season conditions. This work suggests the use of Pacific Ocean SSTs as a means of predicting modern droughts and highlights the need for more local high-resolution paleoclimate P/E records in the midcontinental United States to further constrain local climate conditions in the Midwest's and their relationship with ocean-atmosphere patterns.

7.0 Appendices

Appendix A: Core Database

Core	Core type	Lat (dd N)	Long (dd W)	Elev. (m ASL)	Date	H2O depth (m)	# Drives
A-14	Livingston	41.57648	85.24724	293	5/5/2014	25.0	8
C-14	Surface	41.57621	85.25143	293	5/6/2014	25.0	1
D-14	Livingston	41.57621	85.25143	293	5/6/2014	25.0	9
E-14	Livingston	41.57622	85.25142	293	5/7/2014	25.0	14
G-14	Livingston	41.57897	85.24751	293	9/20/2014	4.7	9
I-14	Surface	41.57621	85.25144	293	9/20/2014	25.0	1
Grab Sample	**Sample type**	**Lat (dd N)**	**Long (dd W)**	**Elev. (m ASL)**	**Date**	**H2O depth (m)**	
1	Surface	41.57491	85.25452	294	8/31/2015	4.0	
2	Surface	41.57501	85.25382	293	8/31/2015	4.0	
3	Surface	41.57507	85.25357	293	8/31/2015	6.8	
4	Surface	41.57542	85.25294	289	8/31/2015	10.2	
5	Surface	41.57551	85.25224	294	8/31/2015	13.5	
6	Surface	41.57557	85.25198	295	8/31/2015	19.0	
7	Surface	41.57576	85.25134	294	8/31/2015	27.0	
8	Surface	41.57643	85.25127	294	8/31/2015	27.2	
9	Surface	41.5766	85.2503	293	8/31/2015	20.5	
10	Surface	41.57721	85.24895	283	8/31/2015	15.0	
11	Surface	41.5774	85.24834	292	8/31/2015	10.0	
12	Surface	41.57741	85.24863	292	8/31/2015	4.0	
13	Surface	41.57773	85.24794	292	8/31/2015	3.0	
14	Surface	41.5789	85.2461	293	8/31/2015	3.0	

Appendix B: Composite Loss on Ignition

Age BC/BCE	1865	1885	1904	1922	1941	1960	1978	1996	2014
Sedimentation Rate	0.10397	0.10470	0.10548	0.10630	0.10717	0.10809	0.10906	0.11009	0.11118
Composite depth (2cm)	16	14	12	10	8	6	4	2	0
Core	l14	l14	l14	l14	l14	l14	l14	l14	l14
Drive	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Top Depth	16	14	12	10	8	6	4	2	0
Bottom Depth	17	15	13	11	9	7	5	3	1
Mean Core Depth	16.5	14.5	12.5	10.5	8.5	6.5	4.5	2.5	0.5
dry BD	0.274	0.211	0.199	0.217	0.204	0.231	0.169	0.209	0.152
Composite%H 2O	78.75969	82.46052	84.60944	84.25254	84.48669	83.73239	85.50600	86.24095	87.78135
Composite %TOM	12.58993	15.13761	16.11374	15.92920	14.15094	15.10204	17.77778	19.45701	23.45679
Composite %TC	21.22302	16.05505	16.11374	17.25664	19.81132	20.00000	17.77778	18.09955	15.43210
Composite %Residual	66.18705	68.80734	67.77251	66.81416	66.03774	64.89796	64.44444	62.44344	61.11111

1648	1668	1688	1708	1728	1748	1768	1788	1807	1827	1846
0.09828	0.09865	0.09904	0.09945	0.09990	0.10038	0.10089	0.10143	0.10201	0.10262	0.10328
38	36	34	32	30	28	26	24	22	20	18
I14	I14	I14	I14	I14	I14	I14	I14	I14	I14	I14
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
38	36	34	32	30	28	26	24	22	20	18
39	37	35	33	31	29	27	25	23	21	19
38.5	36.5	34.5	32.5	30.5	28.5	26.5	24.5	22.5	20.5	18.5
0.21	0.275	0.319	0.324	0.282	0.306	0.304	0.256	0.27	0.283	0.218
81.83391	77.89389	75.90634	76.60650	78.55513	79.04110	78.62166	79.65024	79.85075	77.94232	80.94406
16.59193	13.58885	11.14458	12.12121	11.48649	12.22571	11.57556	12.01550	13.16726	13.05842	14.03509
27.80269	29.26829	29.81928	26.96970	29.05405	26.64577	26.68810	24.41860	20.64057	21.64948	18.85965
55.60538	57.14286	59.03614	60.90909	59.45946	61.12853	61.73633	63.56589	66.19217	65.29210	67.10526

1421	1442	1462	1483	1504	1525	1545	1566	1586	1607	1627
0.09589	0.09600	0.09613	0.09628	0.09645	0.09664	0.09686	0.09710	0.09736	0.09764	0.09795
60	58	56	54	52	50	48	46	44	42	40
I14	I14	I14	I14	I14	I14	I14	I14	I14	I14	I14
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
60	58	56	54	52	50	48	46	44	42	40
61	59	57	55	53	51	49	47	45	43	41
60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5	40.5
0.156	0.1574	0.048	0.113	0.113	0.103	0.04	0.163	0.118	0.135	0.2
86.59794	88.47224	96.39640	90.96000	91.01034	90.43640	96.51264	87.94379	89.64912	89.61538	84.39938
23.07692	28.90173	31.01266	34.64567	34.35115	29.75207	27.50000	25.96685	30.65693	29.41176	19.35484
18.93491	13.87283	11.39241	8.66142	6.10687	10.74380	13.75000	13.81215	13.13869	14.37908	23.50230
57.98817	57.22543	57.59494	56.69291	59.54198	59.50413	58.75000	60.22099	56.20438	56.20915	57.14286

1191	1212	1233	1254	1275	1295	1316	1337	1358	1379	1400
0.09590	0.09581	0.09574	0.09569	0.09565	0.09563	0.09563	0.09565	0.09568	0.09573	0.09580
82	80	78	76	74	72	70	68	66	64	62
I14	I14	I14	I14	I14	I14	I14	I14	I14	I14	I14
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
82	80	78	76	74	72	70	68	66	64	62
83	81	79	77	75	73	71	69	67	65	63
82.5	80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5	62.5
0.124	0.102	0.146	0.127	0.123	0.132	0.113	0.135	0.138	0.164	0.134
89.89405	91.85954	89.73277	90.92209	90.04049	89.99242	90.75286	89.20863	88.58561	87.01504	89.18483
30.71429	35.53719	34.83871	33.56643	34.78261	35.13514	34.61538	33.98693	30.06536	26.40449	28.57143
7.85714	6.61157	6.45161	9.79021	7.24638	7.43243	6.15385	8.49673	14.37908	16.85393	13.60544
61.42857	57.85124	58.70968	56.64336	57.97101	57.43243	59.23077	57.51634	55.55556	56.74157	57.82313

963	984	1004	1025	1046	1066	1087	1108	1128	1149	1170
0.09785	0.09760	0.09736	0.09714	0.09693	0.09674	0.09656	0.09639	0.09625	0.09611	0.09600
104	102	100	98	96	94	92	90	88	86	84
I14	I14	I14	I14	I14	I14	I14	I14	I14	I14	I14
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
104	102	100	98	96	94	92	90	88	86	84
105	103	101	99	97	95	93	91	89	87	85
104.5	102.5	100.5	98.5	96.5	94.5	92.5	90.5	88.5	86.5	84.5
0.117	0.098	0.233	0.134	0.142	0.148	0.25	0.148	0.147	0.116	0.14
90.24187	90.83255	83.21326	88.97119	88.01688	88.23529	80.17446	89.18919	88.96396	90.75697	88.85350
37.31343	37.06897	36.42384	33.33333	28.57143	30.12048	29.26829	27.95031	29.09091	30.53435	28.48101
8.20896	6.89655	7.94702	10.66667	10.55901	11.44578	11.58537	12.42236	10.30303	7.63359	10.75949
54.47761	56.03448	55.62914	56.00000	60.86957	58.43373	59.14634	59.62733	60.60606	61.83206	60.75949

742	762	782	801	821	842	862	882	902	922	943
0.10156	0.10116	0.10076	0.10038	0.10002	0.09966	0.09933	0.09900	0.09869	0.09840	0.09812
126	124	122	120	118	116	114	112	110	108	106
I14	I14	I14	I14	I14	I14	I14	I14	I14	I14	I14
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
126	124	122	120	118	116	114	112	110	108	106
127	125	123	121	119	117	115	113	111	109	107
126.5	124.5	122.5	120.5	118.5	116.5	114.5	112.5	110.5	108.5	106.5
0.279	0.23	0.213	0.199	0.225	0.149	0.169	0.158	0.156	0.137	0.131
78.75095	83.00074	83.01435	82.55916	84.46133	86.95271	87.00000	87.96649	87.84100	88.48739	89.76563
17.28814	21.68675	23.68421	22.68519	26.44628	30.30303	31.01604	30.05780	30.05780	31.01266	36.05442
27.45763	22.48996	21.92982	22.22222	19.83471	16.36364	14.97326	14.45087	11.56069	10.75949	8.16327
55.25424	55.82329	54.38596	55.09259	53.71901	53.33333	54.01070	55.49133	58.38150	58.22785	55.78231

530	549	568	587	606	625	644	664	683	703	722
0.10699	0.10642	0.10587	0.10534	0.10482	0.10431	0.10382	0.10334	0.10287	0.10242	0.10199
148	146	144	142	140	138	136	134	132	130	128
I14	I14	I14	I14	I14	I14	I14	I14	I14	I14	I14
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
148	146	144	142	140	138	136	134	132	130	128
149	147	145	143	141	139	137	135	133	131	129
148.5	146.5	144.5	142.5	140.5	138.5	136.5	134.5	132.5	130.5	128.5
0.113	0.169	0.137	0.143	0.157	0.171	0.263	0.313	0.365	0.282	0.299
90.48020	87.63716	89.45343	89.22381	87.03551	86.45008	80.03037	76.69397	73.79756	78.60395	78.97328
35.65891	31.84358	35.29412	34.78261	28.16092	27.65957	18.57143	16.25767	18.14947	17.56757	18.53035
6.20155	12.29050	9.15033	11.80124	16.66667	18.08511	26.42857	27.60736	26.33452	27.02703	26.83706
58.13953	55.86592	55.55556	53.41615	55.17241	54.25532	55.00000	56.13497	55.51601	55.40541	54.63259

330	348	366	383	401	420	438	456	474	493	511
0.11417	0.11344	0.11273	0.11203	0.11135	0.11068	0.11003	0.10939	0.10877	0.10816	0.10757
170	168	166	164	162	160	158	156	154	152	150
E14	E14	E14	E14	E14	I14	I14	I14	I14	I14	I14
D1	D1	D1	D1	D1	Surface	Surface	Surface	Surface	Surface	Surface
58	56	54	52	50	160	158	156	154	152	150
59	57	55	53	51	161	159	157	155	153	151
58.5	56.5	54.5	52.5	50.5	160.5	158.5	156.5	154.5	152.5	150.5
0.207	0.136	0.155	0.199	0.131	0.195	0.128	0.144	0.202	0.131	0.213
81.19891	85.34483	85.66142	83.17836	86.86058	84.70588	89.02230	88.69702	83.38816	89.66062	84.31517
21.87500	26.97368	26.78571	21.86047	32.35294	23.61111	34.02778	34.59119	32.37410	34.48276	36.43411
24.10714	19.07895	17.26190	20.93023	10.29412	20.83333	8.33333	8.80503	9.35252	7.58621	14.72868
54.01786	53.94737	55.95238	57.20930	57.35294	55.55556	57.63889	56.60377	58.27338	57.93103	48.83721

144	160	177	193	210	227	244	261	278	295	313
0.12320	0.12230	0.12142	0.12055	0.11970	0.11886	0.11804	0.11723	0.11644	0.11567	0.11491
192	190	188	186	184	182	180	178	176	174	172
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1
80	78	76	74	72	70	68	66	64	62	60
81	79	77	75	73	71	69	67	65	63	61
80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5	62.5	60.5
0.17	0.201	0.108	0.144	0.147	0.221	0.145	0.147	0.2	0.187	0.249
83.52713	82.19663	89.94413	86.64193	85.27054	81.01375	85.79824	87.45734	80.54475	81.11111	79.55665
21.42857	31.96721	21.96262	26.11465	27.32919	21.27660	27.21519	30.30303	19.24883	20.29703	18.65672
20.32967	4.91803	21.49533	14.64968	16.77019	22.12766	16.45570	13.93939	24.41315	23.26733	25.00000
58.24176	63.11475	56.54206	59.23567	55.90062	56.59574	56.32911	55.75758	56.33803	56.43564	56.34328

-28	-13	2	17	33	48	64	80	96	112	128
0.13422	0.13313	0.13206	0.13101	0.12998	0.12896	0.12796	0.12697	0.12601	0.13367	0.12412
214	212	210	208	206	204	202	200	198	196	194
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D2	D2	D2	D2	D2	D2	D2	D2	D2	D1	D1
18	16	14	12	10	8	6	4	2	84	82
19	17	15	13	11	9	7	5	3	85	83
18.5	16.5	14.5	12.5	10.5	8.5	6.5	4.5	2.5	84.5	82.5
0.331	0.229	0.163	0.257	0.231	0.121	0.166	0.398	0.165	0.149	0.373
75.39033	80.51064	86.26790	78.52966	81.73913	87.34310	85.25755	66.18522	84.41926	87.31915	63.32350
16.32653	22.50000	28.49162	20.44610	23.77049	32.83582	29.60894	25.59242	27.22222	27.10843	29.07801
24.48980	18.33333	8.93855	20.07435	16.80328	5.97015	10.05587	15.16588	14.44444	12.04819	12.05674
59.18367	59.16667	62.56983	59.47955	59.42623	61.19403	60.33520	59.24171	58.33333	60.84337	58.86525

-185	-172	-158	-144	-130	-116	-101	-87	-72	-58	-43
0.14730	0.14602	0.14477	0.14352	0.14230	0.14109	0.13991	0.13873	0.13758	0.13644	0.13532
236	234	232	230	228	226	224	222	220	218	216
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D3	D3	D3	D2	D2	D2	D2	D2	D2	D2	D2
20	18	16	34	32	30	28	26	24	22	20
21	19	17	35	33	31	29	27	25	23	21
20.5	18.5	16.5	34.5	32.5	30.5	28.5	26.5	24.5	22.5	20.5
0.153	0.17	0.244	0.188	0.224	0.232	0.165	0.169	0.169	0.21	0.309
?	?	?	82.52788	79.50595	78.96646	86.06419	85.85774	84.30826	80.51948	73.61230
30.48780	32.57143	29.80769	26.10837	26.35983	14.24419	29.21348	29.18919	27.71739	22.66667	15.69231
7.31707	7.42857	10.57692	14.77833	18.82845	14.24419	8.98876	9.72973	11.95652	17.77778	25.23077
62.19512	60.00000	59.61538	59.11330	54.81172	71.51163	61.79775	61.08108	60.32609	59.55556	59.07692

-328	-316	-303	-291	-278	-265	-252	-239	-226	-212	-199
0.16242	0.16096	0.15952	0.15810	0.15669	0.15530	0.15393	0.15257	0.15123	0.14990	0.14859
258	256	254	252	250	248	246	244	242	240	238
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D3	D3	D3	D3	D3	D3	D3	D3	D3	D3	D3
42	40	38	36	34	32	30	28	26	24	22
43	41	39	37	35	33	31	29	27	25	23
42.5	40.5	38.5	36.5	34.5	32.5	30.5	28.5	26.5	24.5	22.5
0.213	0.165	0.259	0.244	0.156	0.318	0.146	0.186	0.205	0.205	0.167
?	?	?	?	?	?	?	?	?	?	?
28.70370	29.83425	28.94737	30.61224	29.09091	33.03167	32.50000	32.76836	29.14573	27.50000	31.63842
10.18519	4.97238	5.26316	5.10204	6.06061	4.97738	4.37500	3.95480	7.53769	10.50000	1.12994
61.11111	65.19337	65.78947	64.28571	64.84848	61.99095	63.12500	63.27684	63.31658	62.00000	67.23164

-458	-447	-435	-424	-412	-400	-389	-377	-365	-353	-341
0.17931	0.17772	0.17613	0.17456	0.17300	0.17144	0.16991	0.16838	0.16687	0.16537	0.16389
280	278	276	274	272	270	268	266	264	262	260
D14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D1	D3	D3	D3	D3	D3	D3	D3	D3	D3	D3
14	62	60	58	56	54	52	50	48	46	44
15	63	61	59	57	55	53	51	49	47	45
14.5	62.5	60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5
0.137	0.338	0.314	0.228	0.234	0.275	0.396	0.262	0.215	0.198	0.274
84.89526	?	?	?	?	?	?	?	?	?	?
27.58621	19.71831	18.01802	26.10442	26.74897	19.17808	19.58225	29.60000	30.18868	26.92308	29.13043
4.82759	18.02817	18.91892	9.63855	13.16872	21.91781	20.62663	10.00000	6.13208	6.25000	7.82609
67.58621	62.25352	63.06306	64.25703	60.08230	58.90411	59.79112	60.40000	63.67925	66.82692	63.04348

-575	-565	-555	-544	-534	-523	-513	-502	-491	-480	-469
0.19732	0.19567	0.19401	0.19236	0.19071	0.18906	0.18742	0.18579	0.18416	0.18253	0.18092
302	300	298	296	294	292	290	288	286	284	282
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1
36	34	32	30	28	26	24	22	20	18	16
37	35	33	31	29	27	25	23	21	19	17
36.5	34.5	32.5	30.5	28.5	26.5	24.5	22.5	20.5	18.5	16.5
0.17	0.159	0.155	0.172	0.189	0.162	0.189	0.165	0.166	0.153	0.166
83.93195	82.37251	84.50000	83.00395	83.20000	85.08287	83.20000	83.61470	84.41315	85.20309	84.68635
25.96685	22.09302	25.90361	22.77778	24.87562	27.84091	24.12060	24.85876	27.32558	28.75000	26.74419
6.07735	5.81395	4.81928	5.00000	5.97015	4.54545	5.52764	7.34463	5.81395	4.37500	4.06977
67.95580	72.09302	69.27711	72.22222	69.15423	67.61364	70.35176	67.79661	66.86047	66.87500	69.18605

-682	-673	-664	-654	-644	-635	-625	-615	-605	-595	-585
0.21523	0.21365	0.21206	0.21045	0.20883	0.20721	0.20557	0.20393	0.20228	0.20063	0.19898
324	322	320	318	316	314	312	310	308	306	304
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1
58	56	54	52	50	48	46	44	42	40	38
59	57	55	53	51	49	47	45	43	41	39
58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5	40.5	38.5
0.179	0.161	0.158	0.216	0.168	0.19	0.156	0.165	0.175	0.207	0.159
83.28665	83.01688	84.26295	80.71429	82.89206	82.88288	84.72086	83.18043	83.25359	80.63611	83.08511
24.73118	25.86207	26.31579	20.00000	24.86188	23.26733	25.59524	23.16384	25.13369	21.39535	23.39181
8.06452	6.89655	4.67836	6.22222	5.52486	8.41584	5.95238	7.34463	7.48663	5.58140	5.84795
67.20430	67.24138	69.00585	73.77778	69.61326	68.31683	68.45238	69.49153	67.37968	73.02326	70.76023

-781	-772	-764	-755	-746	-737	-728	-719	-710	-701	-692
0.23118	0.22987	0.22853	0.22715	0.22575	0.22431	0.22285	0.22137	0.21986	0.21834	0.21679
346	344	342	340	338	336	334	332	330	328	326
E14	E14	E14	E14	E14	E14	D14	D14	D14	D14	D14
D4	D4	D4	D4	D4	D4	D1	D1	D1	D1	D1
40	38	36	34	32	30	68	66	64	62	60
41	39	37	35	33	31	69	67	65	63	61
40.5	38.5	36.5	34.5	32.5	30.5	68.5	66.5	64.5	62.5	60.5
0.198	0.192	0.197	0.211	0.184	0.178	0.191	0.189	0.158	0.182	0.173
81.86813	82.02247	81.80979	82.92880	83.77425	83.01527	82.54113	82.40223	83.57588	83.82222	82.32891
23.58491	23.78641	21.59624	24.77876	27.04082	24.47917	25.61576	23.64532	26.90058	25.12821	25.28090
8.96226	7.28155	6.57277	5.75221	8.16327	8.85417	7.88177	9.85222	9.94152	8.20513	8.98876
67.45283	68.93204	71.83099	69.46903	64.79592	66.66667	66.50246	66.50246	63.15789	66.66667	65.73034

-874	-866	-857	-849	-841	-832	-824	-815	-807	-798	-790
0.24294	0.24210	0.24122	0.24028	0.23930	0.23826	0.23719	0.23607	0.23490	0.23370	0.23246
368	366	364	362	360	358	356	354	352	350	348
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D4	D4	D4	D4	D4	D4	D4	D4	D4	D4	D4
62	60	58	56	54	52	50	48	46	44	42
63	61	59	57	55	53	51	49	47	45	43
62.5	60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5
0.203	0.246	0.201	0.243	0.224	0.185	0.198	0.194	0.199	0.164	0.201
82.59005	79.85258	80.21654	80.56000	81.65438	81.88051	82.76762	82.16912	81.31455	82.77311	80.83889
23.74429	20.38462	19.62617	20.46332	21.99170	22.68041	23.80952	20.67308	21.22642	22.90503	21.96262
7.76256	7.30769	5.60748	11.19691	9.54357	5.15464	6.19048	6.73077	8.49057	8.93855	14.01869
68.49315	72.30769	74.76636	68.33977	68.46473	72.16495	70.00000	72.59615	70.28302	68.15642	64.01869

-963	-955	-947	-939	-931	-923	-915	-907	-899	-890	-882
0.24840	0.24820	0.24794	0.24762	0.24724	0.24680	0.24630	0.24574	0.24513	0.24445	0.24372
390	388	386	384	382	380	378	376	374	372	370
D14	D14	D14	D14	E14	E14	E14	E14	E14	E14	E14
D2	D2	D2	D2	D4	D4	D4	D4	D4	D4	D4
34	32	30	28	76	74	72	70	68	66	64
35	33	31	29	77	75	73	71	69	67	65
34.5	32.5	30.5	28.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5
0.162	0.22	0.204	0.288	0.266	0.237	0.196	0.197	0.246	0.222	0.208
82.19780	78.92720	80.00000	77.76062	78.95570	78.76344	80.89669	81.55431	80.33573	80.69565	82.82411
21.63743	18.77729	19.81567	17.18213	33.52601	20.23810	23.00469	25.00000	20.46332	23.43750	22.97297
7.01754	10.04367	7.83410	6.87285	6.35838	10.71429	6.10329	5.76923	6.17761	6.25000	5.85586
71.34503	71.17904	72.35023	75.94502	60.11561	69.04762	70.89202	69.23077	73.35907	70.31250	71.17117

-1052	-1044	-1036	-1028	-1020	-1012	-1004	-996	-988	-980	-971
0.24637	0.24687	0.24731	0.24768	0.24799	0.24824	0.24842	0.24855	0.24860	0.24860	0.24853
412	410	408	406	404	402	400	398	396	394	392
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2
56	54	52	50	48	46	44	42	40	38	36
57	55	53	51	49	47	45	43	41	39	37
56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5	40.5	38.5	36.5
0.195	0.196	0.249	0.22	0.216	0.221	0.215	0.228	0.21	0.23	0.221
83.54430	83.26217	79.55665	82.08469	81.05263	81.73554	83.35913	80.67797	80.53753	80.73702	81.15942
30.58252	27.94118	17.55725	27.07424	23.66071	26.40693	30.80357	28.87029	22.47706	22.78481	20.60086
7.76699	7.84314	9.16031	7.42358	6.25000	8.65801	6.69643	10.87866	11.46789	8.86076	6.86695
61.65049	64.21569	73.28244	65.50218	70.08929	64.93506	62.50000	60.25105	66.05505	68.35443	72.53219

-1143	-1134	-1126	-1118	-1109	-1101	-1093	-1085	-1077	-1068	-1060
0.23713	0.23823	0.23929	0.24029	0.24125	0.24215	0.24299	0.24378	0.24452	0.24520	0.24581
434	432	430	428	426	424	422	420	418	416	414
E14	E14	E14	E14	E14	E14	E14	D14	D14	D14	D14
D5	D5	D5	D5	D5	D5	D5	D2	D2	D2	D2
24	22	20	18	16	14	12	64	62	60	58
25	23	21	19	17	15	13	65	63	61	59
24.5	22.5	20.5	18.5	16.5	14.5	12.5	64.5	62.5	60.5	58.5
0.199	0.217	0.214	0.23	0.216	0.228	0.217	0.266	0.209	0.184	0.207
79.42089	81.48464	79.81132	79.93019	80.12879	80.34483	81.57895	78.95570	80.82569	82.47619	81.33454
19.24528	22.80702	22.93233	20.62257	19.86755	20.52239	24.81203	33.52601	23.52941	22.22222	23.39450
4.70367	4.75162	6.13766	4.47154	5.65463	5.36746	6.43777	6.35838	10.85973	7.40741	11.00917
65.05174	61.20950	59.31609	65.20325	64.33232	64.90504	58.45494	60.11561	65.61086	70.37037	65.59633

-1238	-1229	-1220	-1212	-1203	-1194	-1185	-1177	-1168	-1160	-1151
0.22225	0.22378	0.22528	0.22674	0.22818	0.22957	0.23093	0.23226	0.23354	0.23478	0.23597
456	454	452	450	448	446	444	442	440	438	436
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5
46	44	42	40	38	36	34	32	30	28	26
47	45	43	41	39	37	35	33	31	29	27
46.5	44.5	42.5	40.5	38.5	36.5	34.5	32.5	30.5	28.5	26.5
0.228	0.246	0.262	0.279	0.315	0.216	0.21	0.195	0.22	0.177	0.224
80.59574	77.73756	75.69573	77.11239	74.96025	79.69925	81.69137	83.62720	81.74274	82.01220	78.76777
21.64179	21.19205	20.26578	20.13652	17.43119	23.48485	23.84937	29.16667	27.01613	26.03306	18.62069
9.06096	16.54482	17.37871	17.27057	17.30419	8.69943	6.62544	3.80048	7.76867	7.81657	5.44389
58.73147	54.09773	55.06879	54.92719	57.31633	58.11222	58.92226	55.43943	56.15019	53.62168	65.11725

-1341	-1331	-1322	-1312	-1303	-1293	-1284	-1275	-1265	-1256	-1247
0.20403	0.20577	0.20749	0.20920	0.21090	0.21258	0.21425	0.21589	0.21752	0.21912	0.22070
478	476	474	472	470	468	466	464	462	460	458
D14	D14	D14	E14	E14	E14	E14	E14	E14	E14	E14
D3	D3	D3	D5	D5	D5	D5	D5	D5	D5	D5
20	18	16	62	60	58	56	54	52	50	48
21	19	17	63	61	59	57	55	53	51	49
20.5	18.5	16.5	62.5	60.5	58.5	56.5	54.5	52.5	50.5	48.5
0.288	0.225	0.224	0.193	0.249	0.219	0.234	0.204	0.209	0.219	0.211
76.81159	77.38693	80.75601	82.76786	79.35323	80.51601	78.95683	81.99470	80.98271	81.50338	81.34394
20.00000	19.91525	25.73840	26.04651	21.85185	22.10145	16.16162	25.67568	21.42857	23.78855	26.92308
14.33333	14.40678	10.54852	5.72792	12.46694	10.16088	10.32566	5.41761	8.01782	9.48685	9.33748
65.66667	65.67797	63.71308	55.79952	57.12127	58.59441	61.31851	55.98194	60.89087	57.91289	54.60205

-1454	-1443	-1432	-1422	-1411	-1401	-1391	-1381	-1371	-1361	-1351
0.18465	0.18641	0.18818	0.18994	0.19171	0.19348	0.19525	0.19702	0.19878	0.20054	0.20229
500	498	496	494	492	490	488	486	484	482	480
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D3	D3	D3	D3	D3	D3	D3	D3	D3	D3	D3
42	40	38	36	34	32	30	28	26	24	22
43	41	39	37	35	33	31	29	27	25	23
42.5	40.5	38.5	36.5	34.5	32.5	30.5	28.5	26.5	24.5	22.5
0.158	0.187	0.272	0.248	0.182	0.196	0.203	0.203	0.194	0.239	0.266
83.59294	81.11111	77.79592	78.80342	82.55034	83.21918	82.00355	80.77652	79.91718	79.60751	77.10843
30.40936	25.75758	19.64912	20.07722	26.80412	30.62201	28.03738	25.23364	24.51923	22.70916	20.07168
7.01754	6.56566	9.47368	12.35521	6.70103	4.30622	8.41121	11.21495	11.53846	12.74900	11.46953
62.57310	67.67677	70.87719	67.56757	66.49485	65.07177	63.55140	63.55140	63.94231	64.54183	68.45878

-1579	-1567	-1555	-1543	-1532	-1520	-1509	-1498	-1487	-1475	-1465
0.16577	0.16743	0.16911	0.17080	0.17250	0.17421	0.17593	0.17766	0.17940	0.18114	0.18289
522	520	518	516	514	512	510	508	506	504	502
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D3	D3	D3	D3	D3	D3	D3	D3	D3	D3	D3
64	62	60	58	56	54	52	50	48	46	44
65	63	61	59	57	55	53	51	49	47	45
64.5	62.5	60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5
0.293	0.302	0.299	0.323	0.258	0.272	0.213	0.164	0.213	0.188	0.246
72.33239	72.93907	72.64410	72.99331	75.26366	72.46964	77.24359	81.23570	79.96237	82.78388	79.17019
16.17162	17.89137	17.09677	17.50742	19.62963	16.78322	20.00000	25.71429	25.44643	29.85075	24.51362
19.47195	21.40575	21.29032	20.17804	18.14815	21.67832	14.22222	12.57143	11.60714	8.45771	10.50584
64.35644	60.70288	61.61290	62.31454	62.22222	61.53846	65.77778	61.71429	62.94643	61.69154	64.98054

-1718	-1705	-1692	-1679	-1666	-1653	-1640	-1628	-1615	-1603	-1591
0.14839	0.14989	0.15141	0.15294	0.15449	0.15606	0.15764	0.15924	0.16085	0.16247	0.16411
544	542	540	538	536	534	532	530	528	526	524
E14	E14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D7	D7	D3	D3	D3	D3	D3	D3	D3	D3	D3
36	34	82	80	78	76	74	72	70	68	66
37	35	83	81	79	77	75	73	71	69	67
36.5	34.5	82.5	80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5
0.271	0.276	0.213	0.24	0.32	0.272	0.358	0.317	0.326	0.361	0.305
77.54764	78.88294	77.90456	78.41727	76.94524	74.67412	73.04217	73.15834	74.22925	69.66387	72.47292
17.30104	18.43003	19.73684	19.84127	18.31832	16.96113	15.67568	12.46201	16.76471	14.20912	16.30094
15.57093	15.35836	13.59649	15.87302	14.11411	14.84099	18.64865	21.88450	17.35294	24.66488	21.31661
67.12803	66.21160	66.66667	64.28571	67.56757	68.19788	65.67568	65.65350	65.88235	61.12601	62.38245

-1874	-1860	-1845	-1830	-1816	-1801	-1787	-1773	-1759	-1746	-1732
0.13300	0.13431	0.13564	0.13699	0.13835	0.13973	0.14113	0.14255	0.14398	0.14544	0.14690
566	564	562	560	558	556	554	552	550	548	546
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D7	D7	D7	D7	D7	D7	D7	D7	D7	D7	D7
58	56	54	52	50	48	46	44	42	40	38
59	57	55	53	51	49	47	45	43	41	39
58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5	40.5	38.5
0.276	0.3	0.275	0.3	0.259	0.258	0.257	0.312	0.269	0.261	0.26
77.46939	76.47059	75.64216	75.74778	77.78731	79.54005	79.39054	75.02002	78.51438	77.69231	78.07757
17.24138	16.56250	15.80756	14.74359	16.54412	19.27273	18.90909	15.54878	19.44444	18.41155	19.49458
15.86207	18.75000	20.61856	16.34615	15.44118	12.72727	13.81818	21.64634	14.23611	12.99639	14.80144
66.89655	64.68750	63.57388	68.91026	68.01471	68.00000	67.27273	62.80488	66.31944	68.59206	65.70397

-2048	-2032	-2015	-1999	-1983	-1967	-1951	-1935	-1920	-1905	-1889
0.11971	0.12083	0.12197	0.12313	0.12430	0.12549	0.12670	0.12792	0.12916	0.13042	0.13170
588	586	584	582	580	578	576	574	572	570	568
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D7	D7	D7	D7	D7	D7	D7	D7	D7	D7	D7
80	78	76	74	72	70	68	66	64	62	60
81	79	77	75	73	71	69	67	65	63	61
80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5	62.5	60.5
0.178	0.181	0.207	0.193	0.228	0.236	0.23	0.219	0.234	0.25	0.288
83.81818	84.36960	82.83582	83.91667	80.66158	79.51389	80.24055	81.97531	79.63446	79.23588	77.16098
30.41237	29.94924	28.25112	30.76923	22.54098	25.60000	27.75510	27.89700	20.94862	19.55720	17.88079
10.30928	13.19797	16.14350	11.53846	16.80328	16.80000	16.32653	11.15880	15.41502	16.23616	17.21854
59.27835	56.85279	55.60538	57.69231	60.65574	57.60000	55.91837	60.94421	63.63636	64.20664	64.90066

-2241	-2222	-2204	-2186	-2168	-2151	-2133	-2116	-2099	-2082	-2065
0.10845	0.10939	0.11035	0.11133	0.11232	0.11332	0.11435	0.11539	0.11644	0.11751	0.11860
610	608	606	604	602	600	598	596	594	592	590
D14	D14	D14	D14	D14	D14	E14	E14	E14	E14	E14
D4	D4	D4	D4	D4	D4	D7	D7	D7	D7	D7
42	40	38	36	34	32	90	88	86	84	82
43	41	39	37	35	33	91	89	87	85	83
42.5	40.5	38.5	36.5	34.5	32.5	90.5	88.5	86.5	84.5	82.5
0.214	0.176	0.226	0.164	0.228	0.184	0.245	0.188	0.147	0.181	0.164
81.07869	83.74885	80.94435	84.45498	80.93645	82.67420	79.42905	84.64052	86.24883	84.59574	85.76389
23.42342	28.72928	28.93617	36.57143	22.59414	29.38144	20.00000	31.40097	35.62500	32.98969	34.44444
8.10811	6.07735	11.48936	4.57143	7.53138	8.24742	15.38462	7.24638	6.87500	9.27835	8.33333
68.46847	65.19337	59.57447	58.85714	69.87448	62.37113	64.61538	61.35266	57.50000	57.73196	57.22222

-2452	-2432	-2412	-2393	-2373	-2354	-2334	-2315	-2296	-2278	-2259
0.09904	0.09983	0.10062	0.10143	0.10226	0.10310	0.10395	0.10482	0.10571	0.10660	0.10752
632	630	628	626	624	622	620	618	616	614	612
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D4	D4	D4	D4	D4	D4	D4	D4	D4	D4	D4
64	62	60	58	56	54	52	50	48	46	44
65	63	61	59	57	55	53	51	49	47	45
64.5	62.5	60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5
0.19	0.15	0.192	0.175	0.186	0.193	0.13	0.205	0.23	0.227	0.207
81.33595	83.33333	79.95825	80.24831	79.89189	82.16266	87.53595	81.14075	77.13718	76.45228	78.68177
24.50000	29.37500	23.78641	17.14286	21.93878	25.00000	24.16667	25.35211	14.64435	16.52542	15.59633
6.50000	8.12500	9.70874	9.14286	6.63265	5.88235	13.33333	10.79812	5.85774	13.13559	11.92661
69.00000	62.50000	66.50485	73.71429	71.42857	69.11765	62.50000	63.84977	79.49791	70.33898	72.47706

-2683	-2661	-2640	-2618	-2597	-2576	-2555	-2534	-2513	-2493	-2472
0.09130	0.09194	0.09259	0.09326	0.09394	0.09463	0.09533	0.09604	0.09677	0.09752	0.09827
654	652	650	648	646	644	642	640	638	636	634
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8
48	46	44	42	40	38	36	34	32	30	28
49	47	45	43	41	39	37	35	33	31	29
48.5	46.5	44.5	42.5	40.5	38.5	36.5	34.5	32.5	30.5	28.5
0.191	0.203	0.171	0.196	0.351	0.297	0.323	0.299	0.209	0.214	0.23
82.16620	84.43252	84.89399	83.77483	72.91667	77.08333	75.76894	72.76867	82.88288	82.74194	81.11658
31.25000	35.74661	38.29787	32.40741	23.03523	27.44479	26.97947	28.88889	32.73543	29.43723	25.50607
7.69231	3.61991	1.59574	5.55556	7.04607	6.94006	7.33138	6.03175	4.03587	6.49351	8.90688
61.05769	60.63348	60.10638	62.03704	69.91870	65.61514	65.68915	65.07937	63.22870	64.06926	65.58704

-2932	-2909	-2885	-2862	-2839	-2817	-2794	-2771	-2749	-2727	-2705
0.08504	0.08556	0.08608	0.08661	0.08716	0.08772	0.08828	0.08886	0.08945	0.09006	0.09067
676	674	672	670	668	666	664	662	660	658	656
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8
70	68	66	64	62	60	58	56	54	52	50
71	69	67	65	63	61	59	57	55	53	51
70.5	68.5	66.5	64.5	62.5	60.5	58.5	56.5	54.5	52.5	50.5
0.226	0.209	0.185	0.223	0.218	0.198	0.201	0.194	0.193	0.181	0.219
80.73316	82.85480	82.38095	80.75928	81.28755	83.83673	82.79110	83.88704	84.23203	84.66102	82.10784
28.63071	31.41593	28.57143	23.94958	27.58621	33.02326	29.81651	33.49282	34.74178	35.53299	30.34188
1.65975	5.30973	6.40394	5.88235	5.17241	4.18605	3.66972	4.30622	4.22535	4.56853	7.26496
69.70954	63.27434	65.02463	70.16807	67.24138	62.79070	66.51376	62.20096	61.03286	59.89848	62.39316

-3198	-3173	-3149	-3124	-3100	-3075	-3051	-3027	-3003	-2979	-2956
0.08012	0.08052	0.08093	0.08134	0.08177	0.08220	0.08265	0.08311	0.08358	0.08405	0.08454
698	696	694	692	690	688	686	684	682	680	678
D14	D14	D14	D14	D14	D14	D14	D14	D14	E14	E14
D5	D5	D5	D5	D5	D5	D5	D5	D5	D8	D8
32	30	28	26	24	22	20	18	16	74	72
33	31	29	27	25	23	21	19	17	75	73
32.5	30.5	28.5	26.5	24.5	22.5	20.5	18.5	16.5	74.5	72.5
0.168	0.218	0.183	0.228	0.177	0.195	0.191	0.185	0.186	0.262	0.19
83.09859	80.69088	81.36456	81.81818	81.02894	80.12232	80.58943	80.54679	82.09817	79.79954	81.76583
30.33708	27.31278	27.08333	31.79916	28.72340	24.37811	24.00000	25.90674	28.35052	29.34783	31.70732
6.74157	6.16740	7.29167	5.43933	4.25532	4.97512	6.00000	6.73575	6.18557	7.60870	5.85366
62.92135	66.51982	65.62500	62.76151	67.02128	70.64677	70.00000	67.35751	65.46392	63.04348	62.43902

-3479	-3453	-3427	-3401	-3375	-3350	-3324	-3299	-3273	-3248	-3223
0.07644	0.07673	0.07702	0.07733	0.07764	0.07797	0.07830	0.07865	0.07900	0.07937	0.07974
720	718	716	714	712	710	708	706	704	702	700
E14	E14	E14	E14	E14	E14	E14	D14	D14	D14	D14
D9	D9	D9	D9	D9	D9	D9	D5	D5	D5	D5
16	14	12	10	8	6	4	40	38	36	34
17	15	13	11	9	7	5	41	39	37	35
16.5	14.5	12.5	10.5	8.5	6.5	4.5	40.5	38.5	36.5	34.5
0.315	0.252	0.222	0.2	0.239	0.235	0.267	0.318	0.231	0.211	0.214
78.87324	80.99548	83.29571	83.44371	81.00159	80.83197	78.23961	73.20977	79.33810	81.17752	81.63090
22.65861	28.40909	32.47863	30.41475	21.03175	24.39024	20.86331	11.96319	23.23651	28.50679	28.03738
7.25076	5.68182	5.55556	4.60829	9.52381	4.87805	5.39568	12.88344	6.22407	5.88235	5.60748
70.09063	65.90909	61.96581	64.97696	69.44444	70.73171	73.74101	75.15337	70.53942	65.61086	66.35514

-3772	-3745	-3718	-3691	-3664	-3637	-3611	-3584	-3558	-3531	-3505
0.07394	0.07412	0.07431	0.07450	0.07471	0.07493	0.07516	0.07539	0.07564	0.07590	0.07616
742	740	738	736	734	732	730	728	726	724	722
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D9	D9	D9	D9	D9	D9	D9	D9	D9	D9	D9
38	36	34	32	30	28	26	24	22	20	18
39	37	35	33	31	29	27	25	23	21	19
38.5	36.5	34.5	32.5	30.5	28.5	26.5	24.5	22.5	20.5	18.5
0.272	0.278	0.276	0.225	0.223	0.245	0.189	0.238	0.225	0.235	0.205
77.27652	79.05049	80.32787	83.50440	82.53720	81.93215	84.68395	81.74847	82.39437	82.15642	83.57372
19.44444	21.69492	23.38983	29.79592	30.93220	27.02703	21.35593	26.87747	29.46058	29.36508	31.65138
5.55556	6.10169	5.76271	5.30612	5.93220	4.24710	5.42373	5.53360	4.56432	4.76190	4.58716
75.00000	72.20339	70.84746	64.89796	63.13559	68.72587	73.22034	67.58893	65.97510	65.87302	63.76147

-4072	-4044	-4017	-3989	-3962	-3935	-3907	-3880	-3853	-3826	-3799
0.07265	0.07272	0.07279	0.07288	0.07298	0.07308	0.07320	0.07333	0.07347	0.07361	0.07377
764	762	760	758	756	754	752	750	748	746	744
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D9	D9	D9	D9	D9	D9	D9	D9	D9	D9	D9
60	58	56	54	52	50	48	46	44	42	40
61	59	57	55	53	51	49	47	45	43	41
60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5	40.5
0.236	0.21	0.217	0.236	0.261	0.243	0.248	0.271	0.214	0.219	0.202
81.80416	82.67327	81.90158	81.94338	80.27211	80.60654	81.18361	78.84465	81.91040	82.32446	84.14443
26.19048	24.22907	26.06838	24.60317	22.46377	22.26562	22.00772	20.20906	24.24242	25.21368	30.31674
7.14286	6.60793	5.98291	5.55556	5.07246	5.85938	6.56371	6.27178	6.06061	5.98291	5.42986
66.66667	69.16300	67.94872	69.84127	72.46377	71.87500	71.42857	73.51916	69.69697	68.80342	64.25339

-4375	-4348	-4320	-4292	-4265	-4237	-4210	-4182	-4155	-4127	-4099
0.07269	0.07263	0.07258	0.07254	0.07251	0.07250	0.07249	0.07250	0.07252	0.07255	0.07260
786	784	782	780	778	776	774	772	770	768	766
E14	E14	E14	E14	E14	E14	E14	E14	E14	E14	E14
D9	D9	D9	D9	D9	D9	D9	D9	D9	D9	D9
82	80	78	76	74	72	70	68	66	64	62
83	81	79	77	75	73	71	69	67	65	63
82.5	80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5	62.5
0.22	0.208	0.178	0.366	0.206	0.445	0.086	0.177	0.196	0.219	0.233
82.21504	83.59621	84.52174	75.11897	84.53453	70.35310	92.23827	85.32338	82.94169	82.81005	81.88180
25.53191	25.90909	24.08377	20.48611	21.87500	24.20091	25.37313	29.38389	28.84615	30.60345	25.30120
6.80851	6.36364	7.85340	6.59722	5.46875	6.39269	7.46269	7.10900	7.21154	6.46552	6.02410
67.65957	67.72727	68.06283	72.91667	72.65625	69.40639	67.16418	63.50711	63.94231	62.93103	68.67470

-4675	-4648	-4621	-4594	-4567	-4540	-4512	-4485	-4458	-4430	-4403
0.07433	0.07410	0.07389	0.07370	0.07352	0.07336	0.07321	0.07308	0.07296	0.07286	0.07277
808	806	804	802	800	798	796	794	792	790	788
D14	D14	D14	D14	D14	D14	E14	E14	E14	E14	E14
D6	D6	D6	D6	D6	D6	D9	D9	D9	D9	D9
40	38	36	34	32	30	92	90	88	86	84
41	39	37	35	33	31	93	91	89	87	85
40.5	38.5	36.5	34.5	32.5	30.5	92.5	90.5	88.5	86.5	84.5
0.188	0.178	0.152	0.204	0.136	0.148	0.219	0.236	0.213	0.186	0.195
83.93162	84.14960	84.67742	79.98037	84.56300	84.92872	83.23124	82.71062	82.61224	84.46115	84.91879
20.64220	26.24113	23.87387	23.14410	25.00000	25.70423	28.57143	28.86179	29.46429	27.77778	32.21154
4.58716	2.83688	15.31532	3.49345	3.70370	4.57746	6.92641	5.69106	5.80357	8.08081	9.13462
74.77064	70.92199	60.81081	73.36245	71.29630	69.71831	64.50216	65.44715	64.73214	64.14141	58.65385

-4965	-4940	-4914	-4888	-4862	-4835	-4809	-4782	-4756	-4729	-4702
0.07810	0.07765	0.07722	0.07681	0.07643	0.07607	0.07573	0.07541	0.07511	0.07483	0.07457
830	828	826	824	822	820	818	816	814	812	810
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D6	D6	D6	D6	D6	D6	D6	D6	D6	D6	D6
62	60	58	56	54	52	50	48	46	44	42
63	61	59	57	55	53	51	49	47	45	43
62.5	60.5	58.5	56.5	54.5	52.5	50.5	48.5	46.5	44.5	42.5
0.296	0.17	0.169	0.182	0.222	0.172	0.163	0.161	0.179	0.161	0.196
73.57143	82.25470	82.99799	81.19835	80.77922	81.66311	84.23598	83.91608	82.43376	82.57576	81.36882
24.09091	16.60377	17.14976	24.49799	27.01149	25.57078	24.89960	23.34495	26.66667	26.60099	24.76636
3.18182	12.07547	9.90338	4.81928	4.02299	3.65297	4.81928	4.87805	2.85714	3.94089	4.67290
72.72727	71.32075	72.94686	70.68273	68.96552	70.77626	70.28112	71.77700	70.47619	69.45813	70.56075

-5237	-5214	-5190	-5166	-5141	-5117	-5092	-5067	-5042	-5017	-4991
0.08508	0.08427	0.08349	0.08276	0.08206	0.08140	0.08078	0.08018	0.07962	0.07908	0.07858
852	850	848	846	844	842	840	838	836	834	832
D14	D14	D14	D14	D14	D14	D14	D14	D14	D14	D14
D6	D6	D6	D6	D6	D6	D6	D6	D6	D6	D6
84	82	80	78	76	74	72	70	68	66	64
85	83	81	79	77	75	73	71	69	67	65
84.5	82.5	80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5
0.168	0.181	0.171	0.218	0.231	0.172	0.153	0.192	0.204	0.217	0.32
81.89655	81.56823	83.28446	79.09875	80.08621	84.01487	84.33982	81.15800	80.57143	78.78788	71.09304
21.66065	20.56452	22.94118	24.91349	24.03846	23.10231	23.78855	24.66667	25.17007	30.68783	26.33929
5.77617	6.04839	4.11765	3.80623	4.32692	5.94059	4.84581	6.00000	4.08163	0.52910	3.57143
72.56318	73.38710	72.94118	71.28028	71.63462	70.95710	71.36564	69.33333	70.74830	68.78307	70.08929

-5482	-5461	-5440	-5419	-5397	-5375	-5353	-5330	-5307	-5284	-5261
0.09761	0.09613	0.09473	0.09341	0.09216	0.09098	0.08986	0.08880	0.08780	0.08684	0.08594
874	872	870	868	866	864	862	860	858	856	854
E14	E14	E14	E14	E14	E14	E14	E14	E14	D14	D14
D10	D10	D10	D10	D10	D10	D10	D10	D10	D6	D6
80	78	76	74	72	70	68	66	64	88	86
81	79	77	75	73	71	69	67	65	89	87
80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5	88.5	86.5
0.229	0.232	0.213	0.261	0.217	0.204	0.213	0.308	0.283	0.218	0.177
82.31660	82.94118	83.50116	79.67290	83.43511	83.53511	80.84532	73.44828	76.27829	79.35606	81.02894
19.43320	23.42342	26.36816	26.53061	25.25773	23.72263	23.24324	26.39594	21.84874	23.92157	17.81250
6.07287	4.05405	3.98010	3.57143	3.60825	3.64964	4.32432	3.04569	4.20168	5.49020	9.68750
74.49393	72.52252	69.65174	69.89796	71.13402	72.62774	72.43243	70.55838	73.94958	70.58824	72.50000

-5636	-5618	-5600	-5581	-5562	-5542	-5522	-5502
0.00040	0.11087	0.10860	0.10647	0.10448	0.10260	0.10084	0.09918
890	888	886	884	882	880	878	876
E14	E14	E14	E14	E14	E14	E14	E14
D10	D10	D10	D10	D10	D10	D10	D10
96	94	92	90	88	86	84	82
97	95	93	91	89	87	85	83
96.5	94.5	92.5	90.5	88.5	86.5	84.5	82.5
0.506	0.285	0.353	0.296	0.358	0.253	0.339	0.234
66.19906	79.45205	75.46908	77.97619	75.97315	80.06304	76.92308	83.01887
20.22901	24.72527	29.73761	24.76636	27.95699	27.41313	26.60944	23.50598
3.81679	3.29670	2.33236	3.73832	2.86738	2.31660	3.43348	3.98406
75.95420	71.97802	67.93003	71.49533	69.17563	70.27027	69.95708	72.50996

Appendix C: Composite Magnetic Susceptibilty

Agee BCE/CE	Composite depth (0.5cm)	Core	Drive	Top Depth	Bottom Depth	Mean Core Depth	SI x10-5
2014	0	I14	Surface	0	0.5	0.5	0.2
2009.519674	0.5	I14	Surface	0.5	1	1	0.2
2005.027931	1	I14	Surface	1	1.5	1.5	0.2
2000.524872	1.5	I14	Surface	1.5	2	2	0.2
1996.010599	2	I14	Surface	2	2.5	2.5	0.2
1991.485213	2.5	I14	Surface	2.5	3	3	0.2
1986.948815	3	I14	Surface	3	3.5	3.5	1
1982.401504	3.5	I14	Surface	3.5	4	4	1
1977.843381	4	I14	Surface	4	4.5	4.5	1.5
1973.274546	4.5	I14	Surface	4.5	5	5	1.3
1968.695099	5	I14	Surface	5	5.5	5.5	2
1964.105137	5.5	I14	Surface	5.5	6	6	2.1
1959.504761	6	I14	Surface	6	6.5	6.5	2.1
1954.894069	6.5	I14	Surface	6.5	7	7	1.9
1950.273158	7	I14	Surface	7	7.5	7.5	2.1
1945.642127	7.5	I14	Surface	7.5	8	8	2.1
1941.001073	8	I14	Surface	8	8.5	8.5	2.3
1936.350093	8.5	I14	Surface	8.5	9	9	2.8
1931.689284	9	I14	Surface	9	9.5	9.5	2.9
1927.018744	9.5	I14	Surface	9.5	10	10	3.2
1922.338567	10	I14	Surface	10	10.5	10.5	4.1
1917.64885	10.5	I14	Surface	10.5	11	11	4.3
1912.949689	11	I14	Surface	11	11.5	11.5	4
1908.241178	11.5	I14	Surface	11.5	12	12	4.3
1903.523414	12	I14	Surface	12	12.5	12.5	4.3
1898.796489	12.5	I14	Surface	12.5	13	13	4.2
1894.0605	13	I14	Surface	13	13.5	13.5	3.8
1889.31554	13.5	I14	Surface	13.5	14	14	4.2
1884.561702	14	I14	Surface	14	14.5	14.5	5
1879.79908	14.5	I14	Surface	14.5	15	15	2.1
1875.027767	15	I14	Surface	15	15.5	15.5	1.4
1870.247856	15.5	I14	Surface	15.5	16	16	6.2
1865.45944	16	I14	Surface	16	16.5	16.5	8.3
1860.662609	16.5	I14	Surface	16.5	17	17	8.7

1855.857458	17	I14	Surface	17	17.5	17.5	9.3
1851.044076	17.5	I14	Surface	17.5	18	18	8.2
1846.222555	18	I14	Surface	18	18.5	18.5	7.9
1841.392986	18.5	I14	Surface	18.5	19	19	7.1
1836.555459	19	I14	Surface	19	19.5	19.5	6.4
1831.710066	19.5	I14	Surface	19.5	20	20	7.4
1826.856895	20	I14	Surface	20	20.5	20.5	7.3
1821.996036	20.5	I14	Surface	20.5	21	21	6.3
1817.12758	21	I14	Surface	21	21.5	21.5	6.2
1812.251614	21.5	I14	Surface	21.5	22	22	6.1
1807.368228	22	I14	Surface	22	22.5	22.5	5.8
1802.47751	22.5	I14	Surface	22.5	23	23	5.9
1797.579549	23	I14	Surface	23	23.5	23.5	5.5
1792.674431	23.5	I14	Surface	23.5	24	24	5.8
1787.762245	24	I14	Surface	24	24.5	24.5	6.1
1782.843077	24.5	I14	Surface	24.5	25	25	6.4
1777.917015	25	I14	Surface	25	25.5	25.5	6
1772.984146	25.5	I14	Surface	25.5	26	26	6.7
1768.044554	26	I14	Surface	26	26.5	26.5	7
1763.098328	26.5	I14	Surface	26.5	27	27	6.5
1758.145551	27	I14	Surface	27	27.5	27.5	6.4
1753.18631	27.5	I14	Surface	27.5	28	28	6.9
1748.220689	28	I14	Surface	28	28.5	28.5	7
1743.248774	28.5	I14	Surface	28.5	29	29	7.4
1738.270649	29	I14	Surface	29	29.5	29.5	7.1
1733.286398	29.5	I14	Surface	29.5	30	30	7.7
1728.296104	30	I14	Surface	30	30.5	30.5	8.3
1723.299852	30.5	I14	Surface	30.5	31	31	7.7
1718.297725	31	I14	Surface	31	31.5	31.5	7.7
1713.289806	31.5	I14	Surface	31.5	32	32	7.9
1708.276176	32	I14	Surface	32	32.5	32.5	7.9
1703.256919	32.5	I14	Surface	32.5	33	33	8
1698.232117	33	I14	Surface	33	33.5	33.5	8.5
1693.201852	33.5	I14	Surface	33.5	34	34	8.8
1688.166204	34	I14	Surface	34	34.5	34.5	8.2
1683.125256	34.5	I14	Surface	34.5	35	35	1.5
1678.079087	35	I14	Surface	35	35.5	35.5	8.1
1673.027779	35.5	I14	Surface	35.5	36	36	8.9
1667.971412	36	I14	Surface	36	36.5	36.5	9.3
1662.910065	36.5	I14	Surface	36.5	37	37	9.5
1657.843819	37	I14	Surface	37	37.5	37.5	8.8

1652.772753	37.5	I14	Surface	37.5	38	38	9.2
1647.696946	38	I14	Surface	38	38.5	38.5	8.9
1642.616476	38.5	I14	Surface	38.5	39	39	8.1
1637.531422	39	I14	Surface	39	39.5	39.5	8.9
1632.441863	39.5	I14	Surface	39.5	40	40	9.1
1627.347876	40	I14	Surface	40	40.5	40.5	9.4
1622.249539	40.5	I14	Surface	40.5	41	41	9.6
1617.14693	41	I14	Surface	41	41.5	41.5	9.4
1612.040124	41.5	I14	Surface	41.5	42	42	9.7
1606.9292	42	I14	Surface	42	42.5	42.5	9.5
1601.814233	42.5	I14	Surface	42.5	43	43	8.7
1596.695299	43	I14	Surface	43	43.5	43.5	8.4
1591.572475	43.5	I14	Surface	43.5	44	44	8.9
1586.445836	44	I14	Surface	44	44.5	44.5	9.3
1581.315457	44.5	I14	Surface	44.5	45	45	8.4
1576.181413	45	I14	Surface	45	45.5	45.5	7.5
1571.043779	45.5	I14	Surface	45.5	46	46	8.7
1565.90263	46	I14	Surface	46	46.5	46.5	8.9
1560.758039	46.5	I14	Surface	46.5	47	47	8.3
1555.61008	47	I14	Surface	47	47.5	47.5	7.7
1550.458827	47.5	I14	Surface	47.5	48	48	7.7
1545.304354	48	I14	Surface	48	48.5	48.5	8.1
1540.146732	48.5	I14	Surface	48.5	49	49	7.8
1534.986035	49	I14	Surface	49	49.5	49.5	9.3
1529.822335	49.5	I14	Surface	49.5	50	50	9.6
1524.655704	50	I14	Surface	50	50.5	50.5	9.8
1519.486215	50.5	I14	Surface	50.5	51	51	10
1514.313938	51	I14	Surface	51	51.5	51.5	9.5
1509.138944	51.5	I14	Surface	51.5	52	52	8.4
1503.961306	52	I14	Surface	52	52.5	52.5	8.2
1498.781093	52.5	I14	Surface	52.5	53	53	9.9
1493.598376	53	I14	Surface	53	53.5	53.5	9.9
1488.413225	53.5	I14	Surface	53.5	54	54	9
1483.225709	54	I14	Surface	54	54.5	54.5	8.3
1478.035899	54.5	I14	Surface	54.5	55	55	8.8
1472.843864	55	I14	Surface	55	55.5	55.5	8.7
1467.649672	55.5	I14	Surface	55.5	56	56	8.5
1462.453392	56	I14	Surface	56	56.5	56.5	8.6
1457.255093	56.5	I14	Surface	56.5	57	57	9.4
1452.054843	57	I14	Surface	57	57.5	57.5	8.1
1446.85271	57.5	I14	Surface	57.5	58	58	7.4

1441.648761	58	I14	Surface	58	58.5	58.5	7
1436.443063	58.5	I14	Surface	58.5	59	59	7.2
1431.235684	59	I14	Surface	59	59.5	59.5	8.3
1426.02669	59.5	I14	Surface	59.5	60	60	8
1420.816149	60	I14	Surface	60	60.5	60.5	8.7
1415.604125	60.5	I14	Surface	60.5	61	61	8.4
1410.390685	61	I14	Surface	61	61.5	61.5	8.6
1405.175894	61.5	I14	Surface	61.5	62	62	8
1399.959819	62	I14	Surface	62	62.5	62.5	8.8
1394.742523	62.5	I14	Surface	62.5	63	63	8.7
1389.524072	63	I14	Surface	63	63.5	63.5	8.1
1384.30453	63.5	I14	Surface	63.5	64	64	8
1379.083962	64	I14	Surface	64	64.5	64.5	9.9
1373.862432	64.5	I14	Surface	64.5	65	65	9.8
1368.640002	65	I14	Surface	65	65.5	65.5	8.7
1363.416737	65.5	I14	Surface	65.5	66	66	9.1
1358.1927	66	I14	Surface	66	66.5	66.5	10.1
1352.967953	66.5	I14	Surface	66.5	67	67	10.3
1347.74256	67	I14	Surface	67	67.5	67.5	9.9
1342.516582	67.5	I14	Surface	67.5	68	68	9.8
1337.290082	68	I14	Surface	68	68.5	68.5	10.4
1332.063121	68.5	I14	Surface	68.5	69	69	10
1326.835761	69	I14	Surface	69	69.5	69.5	9.4
1321.608064	69.5	I14	Surface	69.5	70	70	9
1316.380089	70	I14	Surface	70	70.5	70.5	9.1
1311.151898	70.5	I14	Surface	70.5	71	71	10.8
1305.923552	71	I14	Surface	71	71.5	71.5	10
1300.69511	71.5	I14	Surface	71.5	72	72	11.2
1295.466632	72	I14	Surface	72	72.5	72.5	11.4
1290.238179	72.5	I14	Surface	72.5	73	73	11.3
1285.009808	73	I14	Surface	73	73.5	73.5	10
1279.78158	73.5	I14	Surface	73.5	74	74	7.8
1274.553554	74	I14	Surface	74	74.5	74.5	6.3
1269.325787	74.5	I14	Surface	74.5	75	75	8.3
1264.098338	75	I14	Surface	75	75.5	75.5	9.2
1258.871265	75.5	I14	Surface	75.5	76	76	9.9
1253.644626	76	I14	Surface	76	76.5	76.5	10.1
1248.418479	76.5	I14	Surface	76.5	77	77	11
1243.19288	77	I14	Surface	77	77.5	77.5	8.9
1237.967887	77.5	I14	Surface	77.5	78	78	10.1
1232.743556	78	I14	Surface	78	78.5	78.5	8.9

1227.519943	78.5	I14	Surface	78.5	79	79	8.1
1222.297106	79	I14	Surface	79	79.5	79.5	8
1217.075099	79.5	I14	Surface	79.5	80	80	8.5
1211.853978	80	I14	Surface	80	80.5	80.5	7.1
1206.6338	80.5	I14	Surface	80.5	81	81	6
1201.414618	81	I14	Surface	81	81.5	81.5	7.3
1196.196488	81.5	I14	Surface	81.5	82	82	8.3
1190.979464	82	I14	Surface	82	82.5	82.5	10.1
1185.763601	82.5	I14	Surface	82.5	83	83	10.1
1180.548953	83	I14	Surface	83	83.5	83.5	9.6
1175.335574	83.5	I14	Surface	83.5	84	84	9.1
1170.123516	84	I14	Surface	84	84.5	84.5	10.2
1164.912834	84.5	I14	Surface	84.5	85	85	9.1
1159.703581	85	I14	Surface	85	85.5	85.5	8.9
1154.495808	85.5	I14	Surface	85.5	86	86	9.9
1149.28957	86	I14	Surface	86	86.5	86.5	9.4
1144.084917	86.5	I14	Surface	86.5	87	87	9
1138.881903	87	I14	Surface	87	87.5	87.5	8.9
1133.680578	87.5	I14	Surface	87.5	88	88	9.1
1128.480995	88	I14	Surface	88	88.5	88.5	8.9
1123.283204	88.5	I14	Surface	88.5	89	89	8.7
1118.087257	89	I14	Surface	89	89.5	89.5	8.4
1112.893204	89.5	I14	Surface	89.5	90	90	9.8
1107.701095	90	I14	Surface	90	90.5	90.5	9
1102.510982	90.5	I14	Surface	90.5	91	91	8.5
1097.322913	91	I14	Surface	91	91.5	91.5	8.9
1092.136939	91.5	I14	Surface	91.5	92	92	8.1
1086.953109	92	I14	Surface	92	92.5	92.5	8.6
1081.771473	92.5	I14	Surface	92.5	93	93	8.4
1076.592078	93	I14	Surface	93	93.5	93.5	9
1071.414974	93.5	I14	Surface	93.5	94	94	8.9
1066.24021	94	I14	Surface	94	94.5	94.5	8.9
1061.067833	94.5	I14	Surface	94.5	95	95	10.1
1055.897892	95	I14	Surface	95	95.5	95.5	10.5
1050.730434	95.5	I14	Surface	95.5	96	96	9.9
1045.565506	96	I14	Surface	96	96.5	96.5	9.6
1040.403156	96.5	I14	Surface	96.5	97	97	9.8
1035.243431	97	I14	Surface	97	97.5	97.5	10.3
1030.086378	97.5	I14	Surface	97.5	98	98	11.1
1024.932042	98	I14	Surface	98	98.5	98.5	10.4
1019.78047	98.5	I14	Surface	98.5	99	99	10.5

1014.631709	99	I14	Surface	99	99.5	99.5	10.1
1009.485803	99.5	I14	Surface	99.5	100	100	8.5
1004.342798	100	I14	Surface	100	100.5	100.5	7.5
999.2027397	100.5	I14	Surface	100.5	101	101	7.9
994.0656727	101	I14	Surface	101	101.5	101.5	9.4
988.9316417	101.5	I14	Surface	101.5	102	102	8.9
983.8006913	102	I14	Surface	102	102.5	102.5	8.1
978.6728656	102.5	I14	Surface	102.5	103	103	7.7
973.5482086	103	I14	Surface	103	103.5	103.5	7.8
968.4267641	103.5	I14	Surface	103.5	104	104	8.3
963.3085756	104	I14	Surface	104	104.5	104.5	9.3
958.1936862	104.5	I14	Surface	104.5	105	105	8.3
953.0821391	105	I14	Surface	105	105.5	105.5	8.1
947.9739769	105.5	I14	Surface	105.5	106	106	9.7
942.8692422	106	I14	Surface	106	106.5	106.5	9.8
937.7679773	106.5	I14	Surface	106.5	107	107	9.9
932.6702242	107	I14	Surface	107	107.5	107.5	8.9
927.5760246	107.5	I14	Surface	107.5	108	108	10
922.4854202	108	I14	Surface	108	108.5	108.5	9.6
917.3984523	108.5	I14	Surface	108.5	109	109	9.4
912.3151619	109	I14	Surface	109	109.5	109.5	9.5
907.2355898	109.5	I14	Surface	109.5	110	110	10.5
902.1597768	110	I14	Surface	110	110.5	110.5	11
897.087763	110.5	I14	Surface	110.5	111	111	11.4
892.0195886	111	I14	Surface	111	111.5	111.5	11.2
886.9552936	111.5	I14	Surface	111.5	112	112	11.6
881.8949175	112	I14	Surface	112	112.5	112.5	11
876.8384997	112.5	I14	Surface	112.5	113	113	11.3
871.7860795	113	I14	Surface	113	113.5	113.5	10.5
866.7376957	113.5	I14	Surface	113.5	114	114	11.2
861.693387	114	I14	Surface	114	114.5	114.5	11.5
856.653192	114.5	I14	Surface	114.5	115	115	11.8
851.6171487	115	I14	Surface	115	115.5	115.5	11.2
846.5852953	115.5	I14	Surface	115.5	116	116	11.4
841.5576694	116	I14	Surface	116	116.5	116.5	11.4
836.5343085	116.5	I14	Surface	116.5	117	117	11.5
831.5152501	117	I14	Surface	117	117.5	117.5	10.9
826.500531	117.5	I14	Surface	117.5	118	118	10.9
821.4901882	118	I14	Surface	118	118.5	118.5	11.4
816.4842582	118.5	I14	Surface	118.5	119	119	11
811.4827774	119	I14	Surface	119	119.5	119.5	11

806.4857818	119.5	I14	Surface	119.5	120	120	10.6
801.4933074	120	I14	Surface	120	120.5	120.5	11
796.5053899	120.5	I14	Surface	120.5	121	121	11.5
791.5220646	121	I14	Surface	121	121.5	121.5	11.6
786.5433668	121.5	I14	Surface	121.5	122	122	11.6
781.5693314	122	I14	Surface	122	122.5	122.5	11.9
776.5999932	122.5	I14	Surface	122.5	123	123	11
771.6353867	123	I14	Surface	123	123.5	123.5	11.3
766.6755461	123.5	I14	Surface	123.5	124	124	11.4
761.7205056	124	I14	Surface	124	124.5	124.5	11.5
756.7702988	124.5	I14	Surface	124.5	125	125	10.9
751.8249596	125	I14	Surface	125	125.5	125.5	10.8
746.8845211	125.5	I14	Surface	125.5	126	126	10.5
741.9490165	126	I14	Surface	126	126.5	126.5	10.4
737.0184788	126.5	I14	Surface	126.5	127	127	10.1
732.0929407	127	I14	Surface	127	127.5	127.5	10
727.1724346	127.5	I14	Surface	127.5	128	128	9.8
722.2569928	128	I14	Surface	128	128.5	128.5	10.3
717.3466472	128.5	I14	Surface	128.5	129	129	9.3
712.4414297	129	I14	Surface	129	129.5	129.5	8.5
707.5413718	129.5	I14	Surface	129.5	130	130	9.5
702.6465049	130	I14	Surface	130	130.5	130.5	8.9
697.7568601	130.5	I14	Surface	130.5	131	131	9.2
692.8724683	131	I14	Surface	131	131.5	131.5	9.5
687.9933601	131.5	I14	Surface	131.5	132	132	10.3
683.1195661	132	I14	Surface	132	132.5	132.5	11.3
678.2511164	132.5	I14	Surface	132.5	133	133	10.3
673.388041	133	I14	Surface	133	133.5	133.5	9.4
668.5303698	133.5	I14	Surface	133.5	134	134	9
663.6781324	134	I14	Surface	134	134.5	134.5	9.4
658.8313579	134.5	I14	Surface	134.5	135	135	10.4
653.9900757	135	I14	Surface	135	135.5	135.5	10.3
649.1543146	135.5	I14	Surface	135.5	136	136	10.2
644.3241033	136	I14	Surface	136	136.5	136.5	9.3
639.4994702	136.5	I14	Surface	136.5	137	137	9.5
634.6804436	137	I14	Surface	137	137.5	137.5	9.9
629.8670516	137.5	I14	Surface	137.5	138	138	9.5
625.059322	138	I14	Surface	138	138.5	138.5	9.1
620.2572823	138.5	I14	Surface	138.5	139	139	9.7
615.46096	139	I14	Surface	139	139.5	139.5	9.7
610.6703822	139.5	I14	Surface	139.5	140	140	9.2

605.8855758	140	I14	Surface	140	140.5	140.5	10.1
601.1065677	140.5	I14	Surface	140.5	141	141	9
596.3333844	141	I14	Surface	141	141.5	141.5	8.7
591.566052	141.5	I14	Surface	141.5	142	142	10.2
586.8045968	142	I14	Surface	142	142.5	142.5	9.9
582.0490446	142.5	I14	Surface	142.5	143	143	10.2
577.2994211	143	I14	Surface	143	143.5	143.5	9.3
572.5557518	143.5	I14	Surface	143.5	144	144	8.1
567.8180618	144	I14	Surface	144	144.5	144.5	8.1
563.0863762	144.5	I14	Surface	144.5	145	145	8.9
558.3607198	145	I14	Surface	145	145.5	145.5	10.7
553.6411173	145.5	I14	Surface	145.5	146	146	10.7
548.927593	146	I14	Surface	146	146.5	146.5	10.5
544.2201711	146.5	I14	Surface	146.5	147	147	9.7
539.5188755	147	I14	Surface	147	147.5	147.5	9.9
534.8237301	147.5	I14	Surface	147.5	148	148	9.9
530.1347584	148	I14	Surface	148	148.5	148.5	9.9
525.4519837	148.5	I14	Surface	148.5	149	149	9
520.7754292	149	I14	Surface	149	149.5	149.5	8.1
516.1051178	149.5	I14	Surface	149.5	150	150	10.1
511.4410722	150	I14	Surface	150	150.5	150.5	10.9
506.7833149	150.5	I14	Surface	150.5	151	151	11.2
502.1318683	151	I14	Surface	151	151.5	151.5	9.9
497.4867544	151.5	I14	Surface	151.5	152	152	10.1
492.8479951	152	I14	Surface	152	152.5	152.5	9.9
488.2156121	152.5	I14	Surface	152.5	153	153	10.5
483.5896269	153	I14	Surface	153	153.5	153.5	10.5
478.9700607	153.5	I14	Surface	153.5	154	154	9.6
474.3569347	154	I14	Surface	154	154.5	154.5	10.4
469.7502697	154.5	I14	Surface	154.5	155	155	9.2
465.1500864	155	I14	Surface	155	155.5	155.5	9.4
460.5564051	155.5	I14	Surface	155.5	156	156	9.8
455.9692462	156	I14	Surface	156	156.5	156.5	10
451.3886298	156.5	I14	Surface	156.5	157	157	8.6
446.8145756	157	I14	Surface	157	157.5	157.5	10.2
442.2471033	157.5	I14	Surface	157.5	158	158	10.5
437.6862324	158	I14	Surface	158	158.5	158.5	10
433.1319821	158.5	I14	Surface	158.5	159	159	10.4
428.5843714	159	I14	Surface	159	159.5	159.5	9.4
424.0434192	159.5	I14	Surface	159.5	160	160	11.4
419.5091441	160	I14	Surface	160	160.5	160.5	11.8

414.9815646	160.5	I14	Surface	160.5	161	161	11.3
410.460699	161	I14	Surface	161	161.5	161.5	11.8
405.9465652	161.5	E14	D1	50	50.5	50.5	9.7
401.4391811	162	E14	D1	50.5	51	51	9.1
396.9385643	162.5	E14	D1	51	51.5	51.5	8.7
392.4447323	163	E14	D1	51.5	52	52	8.3
387.9577024	163.5	E14	D1	52	52.5	52.5	9.7
383.4774916	164	E14	D1	52.5	53	53	8.7
379.0041168	164.5	E14	D1	53	53.5	53.5	8.9
374.5375946	165	E14	D1	53.5	54	54	8.8
370.0779415	165.5	E14	D1	54	54.5	54.5	8.3
365.6251738	166	E14	D1	54.5	55	55	8.4
361.1793075	166.5	E14	D1	55	55.5	55.5	9.3
356.7403585	167	E14	D1	55.5	56	56	10.3
352.3083426	167.5	E14	D1	56	56.5	56.5	10.5
347.8832751	168	E14	D1	56.5	57	57	9.7
343.4651715	168.5	E14	D1	57	57.5	57.5	10.3
339.0540468	169	E14	D1	57.5	58	58	10.4
334.6499158	169.5	E14	D1	58	58.5	58.5	10.6
330.2527935	170	E14	D1	58.5	59	59	10.6
325.8626942	170.5	E14	D1	59	59.5	59.5	10.2
321.4796323	171	E14	D1	59.5	60	60	11.1
317.103622	171.5	E14	D1	60	60.5	60.5	10.5
312.7346773	172	E14	D1	60.5	61	61	9.4
308.3728118	172.5	E14	D1	61	61.5	61.5	9.9
304.0180391	173	E14	D1	61.5	62	62	10.7
299.6703727	173.5	E14	D1	62	62.5	62.5	9.7
295.3298258	174	E14	D1	62.5	63	63	10.9
290.9964113	174.5	E14	D1	63	63.5	63.5	9.7
286.6701421	175	E14	D1	63.5	64	64	9.1
282.3510308	175.5	E14	D1	64	64.5	64.5	8.9
278.0390899	176	E14	D1	64.5	65	65	10.3
273.7343315	176.5	E14	D1	65	65.5	65.5	9.5
269.4367679	177	E14	D1	65.5	66	66	9.7
265.1464108	177.5	E14	D1	66	66.5	66.5	9.3
260.8632719	178	E14	D1	66.5	67	67	9.8
256.5873629	178.5	E14	D1	67	67.5	67.5	9.9
252.3186949	179	E14	D1	67.5	68	68	10.1
248.0572792	179.5	E14	D1	68	68.5	68.5	9.7
243.8031267	180	E14	D1	68.5	69	69	10.3
239.5562482	180.5	E14	D1	69	69.5	69.5	10.3

235.3166543	181	E14	D1	69.5	70	70	10.5
231.0843553	181.5	E14	D1	70	70.5	70.5	9.8
226.8593615	182	E14	D1	70.5	71	71	10
222.641683	182.5	E14	D1	71	71.5	71.5	10.8
218.4313295	183	E14	D1	71.5	72	72	10.7
214.2283109	183.5	E14	D1	72	72.5	72.5	9.7
210.0326365	184	E14	D1	72.5	73	73	8.6
205.8443157	184.5	E14	D1	73	73.5	73.5	9.3
201.6633576	185	E14	D1	73.5	74	74	9.7
197.4897713	185.5	E14	D1	74	74.5	74.5	9.9
193.3235653	186	E14	D1	74.5	75	75	10.1
189.1647485	186.5	E14	D1	75	75.5	75.5	10
185.013329	187	E14	D1	75.5	76	76	9.7
180.8693153	187.5	E14	D1	76	76.5	76.5	9.9
176.7327154	188	E14	D1	76.5	77	77	10
172.6035371	188.5	E14	D1	77	77.5	77.5	9.3
168.4817882	189	E14	D1	77.5	78	78	9
164.3674761	189.5	E14	D1	78	78.5	78.5	10.1
160.2606083	190	E14	D1	78.5	79	79	10.5
156.1611919	190.5	E14	D1	79	79.5	79.5	10
152.0692339	191	E14	D1	79.5	80	80	10
147.9847411	191.5	E14	D1	80	80.5	80.5	9.4
143.9077202	192	E14	D1	80.5	81	81	9.1
139.8381776	192.5	E14	D1	81	81.5	81.5	8.6
135.7761197	193	E14	D1	81.5	82	82	8.4
131.7215526	193.5	E14	D1	82	82.5	82.5	9.1
127.6744822	194	E14	D1	82.5	83	83	9.3
123.6349143	194.5	E14	D1	83	83.5	83.5	10.1
119.6028545	195	E14	D1	83.5	84	84	9.4
115.5783083	195.5	E14	D1	84	84.5	84.5	9.1
111.5612809	196	E14	D1	84.5	85	85	8.9
107.5517774	196.5	E14	D1	85	85.5	85.5	8.5
103.5498027	197	E14	D1	85.5	86	86	8.7
99.55536154	197.5	E14	D1	86	86.5	86.5	8.6
95.56845855	198	E14	D1	86.5	87	87	8.9
91.58909812	198.5	E14	D1	87	87.5	87.5	8.6
87.61728449	199	E14	D2	4	4.5	4.5	9.3
83.65302171	199.5	E14	D2	4.5	5	5	9.3
79.6963137	200	E14	D2	5	5.5	5.5	8.2
75.74716418	200.5	E14	D2	5.5	6	6	7.9
71.80557673	201	E14	D2	6	6.5	6.5	8

67.87155473	201.5	E14	D2	6.5	7	7	8.1
63.94510141	202	E14	D2	7	7.5	7.5	8.2
60.02621985	202.5	E14	D2	7.5	8	8	8
56.11491293	203	E14	D2	8	8.5	8.5	7.7
52.21118338	203.5	E14	D2	8.5	9	9	7.8
48.31503377	204	E14	D2	9	9.5	9.5	8
44.42646651	204.5	E14	D2	9.5	10	10	8.1
40.54548381	205	E14	D2	10	10.5	10.5	7.5
36.67208775	205.5	E14	D2	10.5	11	11	8
32.80628025	206	E14	D2	11	11.5	11.5	8.1
28.94806303	206.5	E14	D2	11.5	12	12	8.3
25.09743768	207	E14	D2	12	12.5	12.5	8.3
21.25440561	207.5	E14	D2	12.5	13	13	8.3
17.41896809	208	E14	D2	13	13.5	13.5	8
13.59112619	208.5	E14	D2	13.5	14	14	7.9
9.770880842	209	E14	D2	14	14.5	14.5	8
5.958232824	209.5	E14	D2	14.5	15	15	8
2.153182738	210	E14	D2	15	15.5	15.5	8
-1.64426897	210.5	E14	D2	15.5	16	16	8.1
-5.434122013	211	E14	D2	16	16.5	16.5	8.4
-9.216376265	211.5	E14	D2	16.5	17	17	8.3
-12.99103176	212	E14	D2	17	17.5	17.5	8.3
-16.75808869	212.5	E14	D2	17.5	18	18	8.6
-20.5175474	213	E14	D2	18	18.5	18.5	8.6
-24.26940841	213.5	E14	D2	18.5	19	19	8.5
-28.01367237	214	E14	D2	19	19.5	19.5	8.4
-31.75034012	214.5	E14	D2	19.5	20	20	8.3
-35.47941264	215	E14	D2	20	20.5	20.5	8.3
-39.20089106	215.5	E14	D2	20.5	21	21	8.6
-42.91477668	216	E14	D2	21	21.5	21.5	8.8
-46.62107095	216.5	E14	D2	21.5	22	22	8.5
-50.31977546	217	E14	D2	22	22.5	22.5	8.3
-54.010892	217.5	E14	D2	22.5	23	23	8.3
-57.69442246	218	E14	D2	23	23.5	23.5	8.5
-61.37036892	218.5	E14	D2	23.5	24	24	8.6
-65.0387336	219	E14	D2	24	24.5	24.5	8.5
-68.69951888	219.5	E14	D2	24.5	25	25	8.3
-72.35272729	220	E14	D2	25	25.5	25.5	8.5
-75.99836151	220.5	E14	D2	25.5	26	26	8
-79.63642438	221	E14	D2	26	26.5	26.5	7.7
-83.26691888	221.5	E14	D2	26.5	27	27	7.4

-86.88984816	222	E14	D2	27	27.5	27.5	7.7
-90.5052155	222.5	E14	D2	27.5	28	28	7.7
-94.11302435	223	E14	D2	28	28.5	28.5	7.3
-97.71327828	223.5	E14	D2	28.5	29	29	7.1
-101.3059811	224	E14	D2	29	29.5	29.5	7.1
-104.8911366	224.5	E14	D2	29.5	30	30	6.9
-108.4687488	225	E14	D2	30	30.5	30.5	6.7
-112.0388221	225.5	E14	D2	30.5	31	31	7.2
-115.6013606	226	E14	D2	31	31.5	31.5	7.2
-119.1563689	226.5	E14	D2	31.5	32	32	7.3
-122.7038516	227	E14	D2	32	32.5	32.5	7.2
-126.2438135	227.5	E14	D2	32.5	33	33	7.9
-129.7762595	228	E14	D2	33	33.5	33.5	7.7
-133.3011947	228.5	E14	D2	33.5	34	34	7.7
-136.8186243	229	E14	D2	34	34.5	34.5	8.1
-140.3285537	229.5	E14	D2	34.5	35	35	8
-143.8309884	230	E14	D3	16	16.5	16.5	8.9
-147.325934	230.5	E14	D3	16.5	17	17	8.9
-150.8133964	231	E14	D3	17	17.5	17.5	8.8
-154.2933815	231.5	E14	D3	17.5	18	18	8.4
-157.7658953	232	E14	D3	18	18.5	18.5	8.1
-161.2309441	232.5	E14	D3	18.5	19	19	8.5
-164.6885344	233	E14	D3	19	19.5	19.5	9.1
-168.1386725	233.5	E14	D3	19.5	20	20	8.8
-171.5813652	234	E14	D3	20	20.5	20.5	9.1
-175.0166192	234.5	E14	D3	20.5	21	21	8.5
-178.4444415	235	E14	D3	21	21.5	21.5	9.1
-181.8648392	235.5	E14	D3	21.5	22	22	8.3
-185.2778196	236	E14	D3	22	22.5	22.5	8.2
-188.6833898	236.5	E14	D3	22.5	23	23	8.9
-192.0815576	237	E14	D3	23	23.5	23.5	8.9
-195.4723305	237.5	E14	D3	23.5	24	24	9.2
-198.8557163	238	E14	D3	24	24.5	24.5	9.1
-202.2317228	238.5	E14	D3	24.5	25	25	8.9
-205.6003583	239	E14	D3	25	25.5	25.5	9.2
-208.9616309	239.5	E14	D3	25.5	26	26	8.5
-212.3155488	240	E14	D3	26	26.5	26.5	8.9
-215.6621207	240.5	E14	D3	26.5	27	27	9.1
-219.001355	241	E14	D3	27	27.5	27.5	8.3
-222.3332606	241.5	E14	D3	27.5	28	28	8.6
-225.6578462	242	E14	D3	28	28.5	28.5	8.8

-228.975121	242.5	E14	D3	28.5	29	29	8.9
-232.2850941	243	E14	D3	29	29.5	29.5	9.1
-235.5877748	243.5	E14	D3	29.5	30	30	8.5
-238.8831724	244	E14	D3	30	30.5	30.5	8.4
-242.1712966	244.5	E14	D3	30.5	31	31	8.2
-245.452157	245	E14	D3	31	31.5	31.5	9
-248.7257635	245.5	E14	D3	31.5	32	32	9
-251.9921259	246	E14	D3	32	32.5	32.5	7.9
-255.2512545	246.5	E14	D3	32.5	33	33	8.7
-258.5031593	247	E14	D3	33	33.5	33.5	8.7
-261.7478509	247.5	E14	D3	33.5	34	34	9.3
-264.9853395	248	E14	D3	34	34.5	34.5	8.3
-268.2156359	248.5	E14	D3	34.5	35	35	7.6
-271.4387508	249	E14	D3	35	35.5	35.5	8.2
-274.654695	249.5	E14	D3	35.5	36	36	8.5
-277.8634796	250	E14	D3	36	36.5	36.5	8.4
-281.0651158	250.5	E14	D3	36.5	37	37	8.5
-284.2596146	251	E14	D3	37	37.5	37.5	8.9
-287.4469876	251.5	E14	D3	37.5	38	38	9.1
-290.6272463	252	E14	D3	38	38.5	38.5	9.3
-293.8004022	252.5	E14	D3	38.5	39	39	9.5
-296.9664673	253	E14	D3	39	39.5	39.5	9.5
-300.1254533	253.5	E14	D3	39.5	40	40	9.4
-303.2773723	254	E14	D3	40	40.5	40.5	8.9
-306.4222364	254.5	E14	D3	40.5	41	41	8.6
-309.560058	255	E14	D3	41	41.5	41.5	8.5
-312.6908494	255.5	E14	D3	41.5	42	42	8.7
-315.8146231	256	E14	D3	42	42.5	42.5	8.9
-318.9313918	256.5	E14	D3	42.5	43	43	8.9
-322.0411684	257	E14	D3	43	43.5	43.5	8.1
-325.1439656	257.5	E14	D3	43.5	44	44	8.1
-328.2397965	258	E14	D3	44	44.5	44.5	8.3
-331.3286742	258.5	E14	D3	44.5	45	45	8.6
-334.4106121	259	E14	D3	45	45.5	45.5	9.2
-337.4856234	259.5	E14	D3	45.5	46	46	9.3
-340.5537218	260	E14	D3	46	46.5	46.5	9.1
-343.6149208	260.5	E14	D3	46.5	47	47	8.9
-346.6692342	261	E14	D3	47	47.5	47.5	8.9
-349.7166759	261.5	E14	D3	47.5	48	48	8.1
-352.7572599	262	E14	D3	48	48.5	48.5	8.6
-355.7910002	262.5	E14	D3	48.5	49	49	8.8

-358.8179112	263	E14	D3	49	49.5	49.5	8.5
-361.8380072	263.5	E14	D3	49.5	50	50	7.9
-364.8513026	264	E14	D3	50	50.5	50.5	7.6
-367.857812	264.5	E14	D3	50.5	51	51	7.1
-370.8575502	265	E14	D3	51	51.5	51.5	6.8
-373.850532	265.5	E14	D3	51.5	52	52	7
-376.8367723	266	E14	D3	52	52.5	52.5	7
-379.8162861	266.5	E14	D3	52.5	53	53	7.8
-382.7890887	267	E14	D3	53	53.5	53.5	8.3
-385.7551954	267.5	E14	D3	53.5	54	54	8.7
-388.7146215	268	E14	D3	54	54.5	54.5	8.5
-391.6673826	268.5	E14	D3	54.5	55	55	7.6
-394.6134943	269	E14	D3	55	55.5	55.5	7.1
-397.5529724	269.5	E14	D3	55.5	56	56	6.8
-400.4858327	270	E14	D3	56	56.5	56.5	6.4
-403.4120912	270.5	E14	D3	56.5	57	57	6
-406.331764	271	E14	D3	57	57.5	57.5	6
-409.2448673	271.5	E14	D3	57.5	58	58	6.4
-412.1514175	272	E14	D3	58	58.5	58.5	6
-415.0514309	272.5	E14	D3	58.5	59	59	5.3
-417.9449241	273	E14	D3	59	59.5	59.5	5.8
-420.8319137	273.5	E14	D3	59.5	60	60	5.9
-423.7124166	274	E14	D3	60	60.5	60.5	6.4
-426.5864495	274.5	E14	D3	60.5	61	61	6.4
-429.4540296	275	E14	D3	61	61.5	61.5	6.3
-432.3151738	275.5	E14	D3	61.5	62	62	6.8
-435.1698993	276	E14	D3	62	62.5	62.5	6.2
-438.0182236	276.5	E14	D3	62.5	63	63	6.7
-440.8601639	277	E14	D3	63	63.5	63.5	6.2
-443.6957379	277.5	E14	D3	63.5	64	64	6.4
-446.5249631	278	E14	D3	64	64.5	64.5	6.8
-449.3478574	278.5	E14	D3	64.5	65	65	7.5
-452.1644385	279	D14	D1	16	16.5	16.5	7.2
-454.9747244	279.5	D14	D1	16.5	17	17	7.7
-457.7787332	280	D14	D1	17	17.5	17.5	7.5
-460.5764831	280.5	D14	D1	17.5	18	18	7.2
-463.3679922	281	D14	D1	18	18.5	18.5	7.7
-466.1532791	281.5	D14	D1	18.5	19	19	7.4
-468.9323622	282	D14	D1	19	19.5	19.5	7.1
-471.70526	282.5	D14	D1	19.5	20	20	7.3
-474.4719913	283	D14	D1	20	20.5	20.5	7.5

-477.2325749	283.5	D14	D1	20.5	21	21	7.8
-479.9870296	284	D14	D1	21	21.5	21.5	7.4
-482.7353745	284.5	D14	D1	21.5	22	22	7.1
-485.4776286	285	D14	D1	22	22.5	22.5	6.7
-488.2138112	285.5	D14	D1	22.5	23	23	6.5
-490.9439416	286	D14	D1	23	23.5	23.5	6.5
-493.6680392	286.5	D14	D1	23.5	24	24	6.8
-496.3861234	287	D14	D1	24	24.5	24.5	7.5
-499.098214	287.5	D14	D1	24.5	25	25	7.5
-501.8043305	288	D14	D1	25	25.5	25.5	7.9
-504.5044929	288.5	D14	D1	25.5	26	26	7.9
-507.198721	289	D14	D1	26	26.5	26.5	8.4
-509.8870348	289.5	D14	D1	26.5	27	27	8.6
-512.5694544	290	D14	D1	27	27.5	27.5	6.8
-515.2460001	290.5	D14	D1	27.5	28	28	6.3
-517.9166921	291	D14	D1	28	28.5	28.5	6.4
-520.5815508	291.5	D14	D1	28.5	29	29	6.7
-523.2405967	292	D14	D1	29	29.5	29.5	7.7
-525.8938505	292.5	D14	D1	29.5	30	30	8.1
-528.5413327	293	D14	D1	30	30.5	30.5	8.9
-531.1830642	293.5	D14	D1	30.5	31	31	10
-533.8190659	294	D14	D1	31	31.5	31.5	9.8
-536.4493587	294.5	D14	D1	31.5	32	32	9.3
-539.0739636	295	D14	D1	32	32.5	32.5	9.5
-541.6929019	295.5	D14	D1	32.5	33	33	8.9
-544.3061948	296	D14	D1	33	33.5	33.5	8.5
-546.9138637	296.5	D14	D1	33.5	34	34	8.5
-549.5159299	297	D14	D1	34	34.5	34.5	8.1
-552.112415	297.5	D14	D1	34.5	35	35	8.3
-554.7033407	298	D14	D1	35	35.5	35.5	8.8
-557.2887286	298.5	D14	D1	35.5	36	36	8.5
-559.8686006	299	D14	D1	36	36.5	36.5	7.5
-562.4429785	299.5	D14	D1	36.5	37	37	7.3
-565.0118844	300	D14	D1	37	37.5	37.5	7.5
-567.5753403	300.5	D14	D1	37.5	38	38	7.9
-570.1333684	301	D14	D1	38	38.5	38.5	6.9
-572.6859909	301.5	D14	D1	38.5	39	39	7.4
-575.2332302	302	D14	D1	39	39.5	39.5	8.3
-577.7751088	302.5	D14	D1	39.5	40	40	8.7
-580.311649	303	D14	D1	40	40.5	40.5	9.7
-582.8428737	303.5	D14	D1	40.5	41	41	10.3

-585.3688054	304	D14	D1	41	41.5	41.5	9.7
-587.8894669	304.5	D14	D1	41.5	42	42	9.1
-590.4048811	305	D14	D1	42	42.5	42.5	8.4
-592.915071	305.5	D14	D1	42.5	43	43	7.5
-595.4200596	306	D14	D1	43	43.5	43.5	7.3
-597.9198701	306.5	D14	D1	43.5	44	44	6.8
-600.4145256	307	D14	D1	44	44.5	44.5	6.2
-602.9040494	307.5	D14	D1	44.5	45	45	6.4
-605.3884649	308	D14	D1	45	45.5	45.5	6.7
-607.8677957	308.5	D14	D1	45.5	46	46	7.1
-610.3420652	309	D14	D1	46	46.5	46.5	7.2
-612.8112971	309.5	D14	D1	46.5	47	47	6.9
-615.275515	310	D14	D1	47	47.5	47.5	7.1
-617.7347429	310.5	D14	D1	47.5	48	48	6.8
-620.1890045	311	D14	D1	48	48.5	48.5	6.5
-622.6383238	311.5	D14	D1	48.5	49	49	5.6
-625.0827249	312	D14	D1	49	49.5	49.5	6.2
-627.5222319	312.5	D14	D1	49.5	50	50	5.7
-629.956869	313	D14	D1	50	50.5	50.5	5.8
-632.3866604	313.5	D14	D1	50.5	51	51	6.7
-634.8116306	314	D14	D1	51	51.5	51.5	7.2
-637.231804	314.5	D14	D1	51.5	52	52	7.5
-639.647205	315	D14	D1	52	52.5	52.5	7.7
-642.0578584	315.5	D14	D1	52.5	53	53	9.1
-644.4637887	316	D14	D1	53	53.5	53.5	9.5
-646.8650208	316.5	D14	D1	53.5	54	54	8.4
-649.2615794	317	D14	D1	54	54.5	54.5	7.5
-651.6534894	317.5	D14	D1	54.5	55	55	7.7
-654.0407759	318	D14	D1	55	55.5	55.5	7.1
-656.4234639	318.5	D14	D1	55.5	56	56	7.6
-658.8015786	319	D14	D1	56	56.5	56.5	8.2
-661.1751451	319.5	D14	D1	56.5	57	57	7.2
-663.5441888	320	D14	D1	57	57.5	57.5	7
-665.9087349	320.5	D14	D1	57.5	58	58	6.2
-668.268809	321	D14	D1	58	58.5	58.5	5.6
-670.6244365	321.5	D14	D1	58.5	59	59	5.2
-672.975643	322	D14	D1	59	59.5	59.5	5.7
-675.3224542	322.5	D14	D1	59.5	60	60	6.6
-677.6648958	323	D14	D1	60	60.5	60.5	6.9
-680.0029936	323.5	D14	D1	60.5	61	61	5.4
-682.3367734	324	D14	D1	61	61.5	61.5	5

-684.6662613	324.5	D14	D1	61.5	62	62	4.6
-686.9914832	325	D14	D1	62	62.5	62.5	4.4
-689.3124652	325.5	D14	D1	62.5	63	63	4.4
-691.6292334	326	D14	D1	63	63.5	63.5	4.1
-693.9418141	326.5	D14	D1	63.5	64	64	4.2
-696.2502336	327	D14	D1	64	64.5	64.5	4.6
-698.5545182	327.5	D14	D1	64.5	65	65	3.8
-700.8546944	328	D14	D1	65	65.5	65.5	4.8
-703.1507886	328.5	D14	D1	65.5	66	66	4.5
-705.4428275	329	D14	D1	66	66.5	66.5	4.2
-707.7308375	329.5	D14	D1	66.5	67	67	4.8
-710.0148456	330	D14	D1	67	67.5	67.5	5
-712.2948784	330.5	D14	D1	67.5	68	68	4.5
-714.5709627	331	D14	D1	68	68.5	68.5	4.7
-716.8431254	331.5	D14	D1	68.5	69	69	4.2
-719.1113936	332	D14	D1	69	69.5	69.5	3.7
-721.3757942	332.5	D14	D1	69.5	70	70	3.2
-723.6363543	333	D14	D1	70	70.5	70.5	4
-725.8931012	333.5	D14	D1	70.5	71	71	3.3
-728.1460619	334	D14	D1	71	71.5	71.5	4.5
-730.3952639	334.5	D14	D1	71.5	72	72	4
-732.6407343	335	E14	D4	30	30.5	30.5	4.2
-734.8825008	335.5	E14	D4	30.5	31	31	3.9
-737.1205906	336	E14	D4	31	31.5	31.5	2.9
-739.3550314	336.5	E14	D4	31.5	32	32	3.8
-741.5858508	337	E14	D4	32	32.5	32.5	3.6
-743.8130764	337.5	E14	D4	32.5	33	33	3.6
-746.0367359	338	E14	D4	33	33.5	33.5	3.2
-748.2568571	338.5	E14	D4	33.5	34	34	3.6
-750.4734679	339	E14	D4	34	34.5	34.5	3.4
-752.6865961	339.5	E14	D4	34.5	35	35	3.4
-754.8962697	340	E14	D4	35	35.5	35.5	3.6
-757.1025168	340.5	E14	D4	35.5	36	36	3.3
-759.3053653	341	E14	D4	36	36.5	36.5	3
-761.5048434	341.5	E14	D4	36.5	37	37	3.1
-763.7009794	342	E14	D4	37	37.5	37.5	3.8
-765.8938014	342.5	E14	D4	37.5	38	38	4
-768.0833378	343	E14	D4	38	38.5	38.5	4
-770.2696168	343.5	E14	D4	38.5	39	39	4.3
-772.4526671	344	E14	D4	39	39.5	39.5	3.8
-774.6325169	344.5	E14	D4	39.5	40	40	3.6

-776.8091949	345	E14	D4	40	40.5	40.5	4
-778.9827296	345.5	E14	D4	40.5	41	41	4.2
-781.1531496	346	E14	D4	41	41.5	41.5	3.6
-783.3204837	346.5	E14	D4	41.5	42	42	3
-785.4847605	347	E14	D4	42	42.5	42.5	2.9
-787.646009	347.5	E14	D4	42.5	43	43	2.4
-789.8042578	348	E14	D4	43	43.5	43.5	3
-791.959536	348.5	E14	D4	43.5	44	44	3
-794.1118725	349	E14	D4	44	44.5	44.5	2.9
-796.2612963	349.5	E14	D4	44.5	45	45	3.4
-798.4078365	350	E14	D4	45	45.5	45.5	3.4
-800.551522	350.5	E14	D4	45.5	46	46	3.8
-802.6923823	351	E14	D4	46	46.5	46.5	3.2
-804.8304463	351.5	E14	D4	46.5	47	47	3.7
-806.9657434	352	E14	D4	47	47.5	47.5	3.8
-809.098303	352.5	E14	D4	47.5	48	48	3.9
-811.2281542	353	E14	D4	48	48.5	48.5	4.2
-813.3553266	353.5	E14	D4	48.5	49	49	3.7
-815.4798497	354	E14	D4	49	49.5	49.5	4
-817.6017528	354.5	E14	D4	49.5	50	50	4
-819.7210656	355	E14	D4	50	50.5	50.5	4.2
-821.8378177	355.5	E14	D4	50.5	51	51	4.5
-823.9520387	356	E14	D4	51	51.5	51.5	4.5
-826.0637582	356.5	E14	D4	51.5	52	52	4.4
-828.1730061	357	E14	D4	52	52.5	52.5	4.5
-830.2798121	357.5	E14	D4	52.5	53	53	4.8
-832.384206	358	E14	D4	53	53.5	53.5	4
-834.4862177	358.5	E14	D4	53.5	54	54	4.6
-836.5858771	359	E14	D4	54	54.5	54.5	5.9
-838.6832141	359.5	E14	D4	54.5	55	55	4.9
-840.7782589	360	E14	D4	55	55.5	55.5	4.9
-842.8710414	360.5	E14	D4	55.5	56	56	4.6
-844.9615916	361	E14	D4	56	56.5	56.5	4.2
-847.0499398	361.5	E14	D4	56.5	57	57	4.2
-849.1361161	362	E14	D4	57	57.5	57.5	4.6
-851.2201507	362.5	E14	D4	57.5	58	58	4.3
-853.3020739	363	E14	D4	58	58.5	58.5	4.2
-855.3819159	363.5	E14	D4	58.5	59	59	5.2
-857.4597072	364	E14	D4	59	59.5	59.5	4.8
-859.535478	364.5	E14	D4	59.5	60	60	4.8
-861.6092588	365	E14	D4	60	60.5	60.5	5.6

-863.68108	365.5	E14	D4	60.5	61	61	6.4
-865.7509722	366	E14	D4	61	61.5	61.5	6
-867.8189659	366.5	E14	D4	61.5	62	62	6
-869.8850915	367	E14	D4	62	62.5	62.5	6.2
-871.9493799	367.5	E14	D4	62.5	63	63	6.4
-874.0118615	368	E14	D4	63	63.5	63.5	4.6
-876.072567	368.5	E14	D4	63.5	64	64	3.5
-878.1315273	369	E14	D4	64	64.5	64.5	4.1
-880.188773	369.5	E14	D4	64.5	65	65	4.3
-882.2443349	370	E14	D4	65	65.5	65.5	4.1
-884.2982439	370.5	E14	D4	65.5	66	66	2.9
-886.3505307	371	E14	D4	66	66.5	66.5	5
-888.4012264	371.5	E14	D4	66.5	67	67	6
-890.4503618	372	E14	D4	67	67.5	67.5	6.8
-892.4979679	372.5	E14	D4	67.5	68	68	7.2
-894.5440756	373	E14	D4	68	68.5	68.5	7.3
-896.5887161	373.5	E14	D4	68.5	69	69	8.2
-898.6319204	374	E14	D4	69	69.5	69.5	7.7
-900.6737195	374.5	E14	D4	69.5	70	70	7.2
-902.7141446	375	E14	D4	70	70.5	70.5	6.5
-904.7532268	375.5	E14	D4	70.5	71	71	7.3
-906.7909974	376	E14	D4	71	71.5	71.5	7.7
-908.8274875	376.5	E14	D4	71.5	72	72	7.2
-910.8627283	377	E14	D4	72	72.5	72.5	6.8
-912.8967513	377.5	E14	D4	72.5	73	73	6.6
-914.9295876	378	E14	D4	73	73.5	73.5	7
-916.9612687	378.5	E14	D4	73.5	74	74	7.3
-918.9918258	379	E14	D4	74	74.5	74.5	7.1
-921.0212903	379.5	E14	D4	74.5	75	75	7.5
-923.0496938	380	E14	D4	75	75.5	75.5	7.7
-925.0770676	380.5	E14	D4	75.5	76	76	7.9
-927.1034431	381	E14	D4	76	76.5	76.5	7.7
-929.128852	381.5	E14	D4	76.5	77	77	7.7
-931.1533257	382	E14	D4	77	77.5	77.5	7.6
-933.1768958	382.5	E14	D4	77.5	78	78	7
-935.1995939	383	E14	D4	78	78.5	78.5	7.5
-937.2214515	383.5	E14	D4	78.5	79	79	8.7
-939.2425003	384	E14	D4	79	79.5	79.5	8.5
-941.2627719	384.5	D14	D2	28	28.5	28.5	8.3
-943.2822981	385	D14	D2	28.5	29	29	8.3
-945.3011105	385.5	D14	D2	29	29.5	29.5	9

-947.3192408	386	D14	D2	29.5	30	30	9
-949.3367208	386.5	D14	D2	30	30.5	30.5	8.9
-951.3535822	387	D14	D2	30.5	31	31	8.9
-953.3698569	387.5	D14	D2	31	31.5	31.5	8.5
-955.3855767	388	D14	D2	31.5	32	32	7.3
-957.4007733	388.5	D14	D2	32	32.5	32.5	6.7
-959.4154787	389	D14	D2	32.5	33	33	6.5
-961.4297247	389.5	D14	D2	33	33.5	33.5	7
-963.4435432	390	D14	D2	33.5	34	34	6.7
-965.4569661	390.5	D14	D2	34	34.5	34.5	7.3
-967.4700254	391	D14	D2	34.5	35	35	7.2
-969.482753	391.5	D14	D2	35	35.5	35.5	7.9
-971.4951808	392	D14	D2	35.5	36	36	7.7
-973.507341	392.5	D14	D2	36	36.5	36.5	7.7
-975.5192653	393	D14	D2	36.5	37	37	7.8
-977.530986	393.5	D14	D2	37	37.5	37.5	7.6
-979.542535	394	D14	D2	37.5	38	38	6.7
-981.5539444	394.5	D14	D2	38	38.5	38.5	7.1
-983.5652462	395	D14	D2	38.5	39	39	7.5
-985.5764726	395.5	D14	D2	39	39.5	39.5	7.3
-987.5876556	396	D14	D2	39.5	40	40	6.8
-989.5988274	396.5	D14	D2	40	40.5	40.5	6.6
-991.61002	397	D14	D2	40.5	41	41	6.2
-993.6212657	397.5	D14	D2	41	41.5	41.5	6
-995.6325966	398	D14	D2	41.5	42	42	5.8
-997.6440449	398.5	D14	D2	42	42.5	42.5	6.3
-999.6556428	399	D14	D2	42.5	43	43	5.7
-1001.667422	399.5	D14	D2	43	43.5	43.5	5.8
-1003.679416	400	D14	D2	43.5	44	44	5.7
-1005.691656	400.5	D14	D2	44	44.5	44.5	5.8
-1007.704174	401	D14	D2	44.5	45	45	7
-1009.717003	401.5	D14	D2	45	45.5	45.5	6.5
-1011.730175	402	D14	D2	45.5	46	46	6.7
-1013.743722	402.5	D14	D2	46	46.5	46.5	6.6
-1015.757676	403	D14	D2	46.5	47	47	6.5
-1017.77207	403.5	D14	D2	47	47.5	47.5	6.4
-1019.786936	404	D14	D2	47.5	48	48	6.9
-1021.802307	404.5	D14	D2	48	48.5	48.5	6.8
-1023.818214	405	D14	D2	48.5	49	49	7.3
-1025.834691	405.5	D14	D2	49	49.5	49.5	7.5
-1027.851768	406	D14	D2	49.5	50	50	6.5

-1029.869479	406.5	D14	D2	50	50.5	50.5	6
-1031.887856	407	D14	D2	50.5	51	51	6.4
-1033.906932	407.5	D14	D2	51	51.5	51.5	6.7
-1035.926738	408	D14	D2	51.5	52	52	7
-1037.947307	408.5	D14	D2	52	52.5	52.5	7.5
-1039.968672	409	D14	D2	52.5	53	53	7.5
-1041.990864	409.5	D14	D2	53	53.5	53.5	6
-1044.013917	410	D14	D2	53.5	54	54	5.1
-1046.037862	410.5	D14	D2	54	54.5	54.5	4.6
-1048.062732	411	D14	D2	54.5	55	55	4.4
-1050.088559	411.5	D14	D2	55	55.5	55.5	4.6
-1052.115376	412	D14	D2	55.5	56	56	5
-1054.143214	412.5	D14	D2	56	56.5	56.5	5.6
-1056.172108	413	D14	D2	56.5	57	57	6.1
-1058.202088	413.5	D14	D2	57	57.5	57.5	5.3
-1060.233187	414	D14	D2	57.5	58	58	5.2
-1062.265438	414.5	D14	D2	58	58.5	58.5	5.2
-1064.298873	415	D14	D2	58.5	59	59	5.1
-1066.333524	415.5	D14	D2	59	59.5	59.5	4.4
-1068.369425	416	D14	D2	59.5	60	60	4.7
-1070.406606	416.5	D14	D2	60	60.5	60.5	5
-1072.445101	417	D14	D2	60.5	61	61	5.8
-1074.484942	417.5	D14	D2	61	61.5	61.5	6.5
-1076.526161	418	D14	D2	61.5	62	62	5.8
-1078.568791	418.5	D14	D2	62	62.5	62.5	6.2
-1080.612864	419	D14	D2	62.5	63	63	6.1
-1082.658412	419.5	D14	D2	63	63.5	63.5	6.7
-1084.705469	420	E14	D5	12	12.5	12.5	6.6
-1086.754065	420.5	E14	D5	12.5	13	13	6.8
-1088.804235	421	E14	D5	13	13.5	13.5	6.6
-1090.856009	421.5	E14	D5	13.5	14	14	7.4
-1092.909421	422	E14	D5	14	14.5	14.5	7.5
-1094.964502	422.5	E14	D5	14.5	15	15	7.1
-1097.021285	423	E14	D5	15	15.5	15.5	6.8
-1099.079803	423.5	E14	D5	15.5	16	16	7
-1101.140087	424	E14	D5	16	16.5	16.5	7.3
-1103.202171	424.5	E14	D5	16.5	17	17	8.5
-1105.266085	425	E14	D5	17	17.5	17.5	7.5
-1107.331864	425.5	E14	D5	17.5	18	18	7.5
-1109.399538	426	E14	D5	18	18.5	18.5	7.6
-1111.469141	426.5	E14	D5	18.5	19	19	7

-1113.540704	427	E14	D5	19	19.5	19.5	7.1
-1115.61426	427.5	E14	D5	19.5	20	20	6.3
-1117.689841	428	E14	D5	20	20.5	20.5	5.5
-1119.76748	428.5	E14	D5	20.5	21	21	4.8
-1121.847208	429	E14	D5	21	21.5	21.5	5
-1123.929058	429.5	E14	D5	21.5	22	22	6.2
-1126.013061	430	E14	D5	22	22.5	22.5	6.2
-1128.099252	430.5	E14	D5	22.5	23	23	6
-1130.18766	431	E14	D5	23	23.5	23.5	6.2
-1132.278319	431.5	E14	D5	23.5	24	24	6.1
-1134.371262	432	E14	D5	24	24.5	24.5	6.6
-1136.466519	432.5	E14	D5	24.5	25	25	6
-1138.564123	433	E14	D5	25	25.5	25.5	6.2
-1140.664106	433.5	E14	D5	25.5	26	26	6.4
-1142.766501	434	E14	D5	26	26.5	26.5	5.9
-1144.871339	434.5	E14	D5	26.5	27	27	6.1
-1146.978653	435	E14	D5	27	27.5	27.5	6.3
-1149.088475	435.5	E14	D5	27.5	28	28	4.8
-1151.200836	436	E14	D5	28	28.5	28.5	4.6
-1153.315769	436.5	E14	D5	28.5	29	29	4.4
-1155.433306	437	E14	D5	29	29.5	29.5	4.3
-1157.553478	437.5	E14	D5	29.5	30	30	4.4
-1159.676318	438	E14	D5	30	30.5	30.5	3.4
-1161.801858	438.5	E14	D5	30.5	31	31	3.7
-1163.93013	439	E14	D5	31	31.5	31.5	3.6
-1166.061165	439.5	E14	D5	31.5	32	32	4.7
-1168.194996	440	E14	D5	32	32.5	32.5	4.4
-1170.331654	440.5	E14	D5	32.5	33	33	3.5
-1172.471171	441	E14	D5	33	33.5	33.5	3.5
-1174.61358	441.5	E14	D5	33.5	34	34	4.3
-1176.758912	442	E14	D5	34	34.5	34.5	5
-1178.907198	442.5	E14	D5	34.5	35	35	4.5
-1181.058471	443	E14	D5	35	35.5	35.5	5.4
-1183.212762	443.5	E14	D5	35.5	36	36	4.8
-1185.370104	444	E14	D5	36	36.5	36.5	4.2
-1187.530527	444.5	E14	D5	36.5	37	37	2.7
-1189.694064	445	E14	D5	37	37.5	37.5	2.7
-1191.860746	445.5	E14	D5	37.5	38	38	2.7
-1194.030605	446	E14	D5	38	38.5	38.5	2.8
-1196.203672	446.5	E14	D5	38.5	39	39	3
-1198.379979	447	E14	D5	39	39.5	39.5	3.4

-1200.559559	447.5	E14	D5	39.5	40	40	3.5
-1202.742441	448	E14	D5	40	40.5	40.5	4
-1204.928658	448.5	E14	D5	40.5	41	41	4.1
-1207.118241	449	E14	D5	41	41.5	41.5	3.5
-1209.311222	449.5	E14	D5	41.5	42	42	3.2
-1211.507632	450	E14	D5	42	42.5	42.5	3.1
-1213.707503	450.5	E14	D5	42.5	43	43	2.7
-1215.910866	451	E14	D5	43	43.5	43.5	3.5
-1218.117752	451.5	E14	D5	43.5	44	44	3.7
-1220.328193	452	E14	D5	44	44.5	44.5	3.8
-1222.54222	452.5	E14	D5	44.5	45	45	3.9
-1224.759864	453	E14	D5	45	45.5	45.5	4.1
-1226.981157	453.5	E14	D5	45.5	46	46	4.3
-1229.206129	454	E14	D5	46	46.5	46.5	3
-1231.434812	454.5	E14	D5	46.5	47	47	3.9
-1233.667238	455	E14	D5	47	47.5	47.5	4.7
-1235.903436	455.5	E14	D5	47.5	48	48	4.1
-1238.143439	456	E14	D5	48	48.5	48.5	4
-1240.387278	456.5	E14	D5	48.5	49	49	4.2
-1242.634982	457	E14	D5	49	49.5	49.5	3.7
-1244.886584	457.5	E14	D5	49.5	50	50	3.5
-1247.142115	458	E14	D5	50	50.5	50.5	3.2
-1249.401604	458.5	E14	D5	50.5	51	51	3.3
-1251.665084	459	E14	D5	51	51.5	51.5	3.4
-1253.932585	459.5	E14	D5	51.5	52	52	3.5
-1256.204138	460	E14	D5	52	52.5	52.5	3.7
-1258.479773	460.5	E14	D5	52.5	53	53	4.8
-1260.759522	461	E14	D5	53	53.5	53.5	4.7
-1263.043415	461.5	E14	D5	53.5	54	54	4
-1265.331483	462	E14	D5	54	54.5	54.5	4
-1267.623756	462.5	E14	D5	54.5	55	55	4.4
-1269.920266	463	E14	D5	55	55.5	55.5	4.8
-1272.221042	463.5	E14	D5	55.5	56	56	4.6
-1274.526115	464	E14	D5	56	56.5	56.5	4.5
-1276.835515	464.5	E14	D5	56.5	57	57	4.5
-1279.149274	465	E14	D5	57	57.5	57.5	4.6
-1281.467422	465.5	E14	D5	57.5	58	58	5.2
-1283.789988	466	E14	D5	58	58.5	58.5	4.6
-1286.117004	466.5	E14	D5	58.5	59	59	3.9
-1288.448499	467	E14	D5	59	59.5	59.5	3.2
-1290.784504	467.5	E14	D5	59.5	60	60	3.2

-1293.125049	468	E14	D5	60	60.5	60.5	3.2
-1295.470164	468.5	E14	D5	60.5	61	61	2.5
-1297.819879	469	E14	D5	61	61.5	61.5	2.1
-1300.174225	469.5	E14	D5	61.5	62	62	3.2
-1302.533232	470	E14	D5	62	62.5	62.5	4
-1304.896928	470.5	E14	D5	62.5	63	63	4.7
-1307.265346	471	E14	D5	63	63.5	63.5	4.6
-1309.638513	471.5	E14	D5	63.5	64	64	4.2
-1312.016461	472	E14	D5	64	64.5	64.5	4.4
-1314.399219	472.5	E14	D5	64.5	65	65	4.2
-1316.786817	473	E14	D5	65	65.5	65.5	4
-1319.179284	473.5	D14	D3	16	16.5	16.5	4
-1321.57665	474	D14	D3	16.5	17	17	4.2
-1323.978946	474.5	D14	D3	17	17.5	17.5	4.4
-1326.386199	475	D14	D3	17.5	18	18	4.6
-1328.798441	475.5	D14	D3	18	18.5	18.5	4.4
-1331.215701	476	D14	D3	18.5	19	19	4.1
-1333.638007	476.5	D14	D3	19	19.5	19.5	4
-1336.06539	477	D14	D3	19.5	20	20	3.5
-1338.497879	477.5	D14	D3	20	20.5	20.5	2.8
-1340.935502	478	D14	D3	20.5	21	21	2.8
-1343.37829	478.5	D14	D3	21	21.5	21.5	2.9
-1345.826272	479	D14	D3	21.5	22	22	3.2
-1348.279476	479.5	D14	D3	22	22.5	22.5	3.3
-1350.737932	480	D14	D3	22.5	23	23	3.2
-1353.201669	480.5	D14	D3	23	23.5	23.5	2.4
-1355.670716	481	D14	D3	23.5	24	24	2.2
-1358.145102	481.5	D14	D3	24	24.5	24.5	2.1
-1360.624856	482	D14	D3	24.5	25	25	2.5
-1363.110006	482.5	D14	D3	25	25.5	25.5	2.3
-1365.600581	483	D14	D3	25.5	26	26	2.7
-1368.096611	483.5	D14	D3	26	26.5	26.5	2.4
-1370.598124	484	D14	D3	26.5	27	27	2.7
-1373.105148	484.5	D14	D3	27	27.5	27.5	2.9
-1375.617712	485	D14	D3	27.5	28	28	2.7
-1378.135844	485.5	D14	D3	28	28.5	28.5	2.1
-1380.659574	486	D14	D3	28.5	29	29	1.8
-1383.18893	486.5	D14	D3	29	29.5	29.5	1.3
-1385.723939	487	D14	D3	29.5	30	30	1.4
-1388.26463	487.5	D14	D3	30	30.5	30.5	1.3
-1390.811032	488	D14	D3	30.5	31	31	1.5

-1393.363172	488.5	D14	D3	31	31.5	31.5	1.9
-1395.921079	489	D14	D3	31.5	32	32	2.1
-1398.484781	489.5	D14	D3	32	32.5	32.5	2.8
-1401.054306	490	D14	D3	32.5	33	33	3.2
-1403.629681	490.5	D14	D3	33	33.5	33.5	3.2
-1406.210935	491	D14	D3	33.5	34	34	3.4
-1408.798096	491.5	D14	D3	34	34.5	34.5	3.8
-1411.391191	492	D14	D3	34.5	35	35	4.8
-1413.990248	492.5	D14	D3	35	35.5	35.5	4.9
-1416.595295	493	D14	D3	35.5	36	36	5
-1419.206359	493.5	D14	D3	36	36.5	36.5	5.6
-1421.823468	494	D14	D3	36.5	37	37	6
-1424.446649	494.5	D14	D3	37	37.5	37.5	6
-1427.07593	495	D14	D3	37.5	38	38	5.2
-1429.711338	495.5	D14	D3	38	38.5	38.5	5.8
-1432.3529	496	D14	D3	38.5	39	39	1.5
-1435.000644	496.5	D14	D3	39	39.5	39.5	3
-1437.654597	497	D14	D3	39.5	40	40	2.1
-1440.314786	497.5	D14	D3	40	40.5	40.5	2
-1442.981237	498	D14	D3	40.5	41	41	1.8
-1445.653978	498.5	D14	D3	41	41.5	41.5	1.9
-1448.333036	499	D14	D3	41.5	42	42	2.1
-1451.018438	499.5	D14	D3	42	42.5	42.5	2.8
-1453.71021	500	D14	D3	42.5	43	43	3.2
-1456.408379	500.5	D14	D3	43	43.5	43.5	1.9
-1459.112972	501	D14	D3	43.5	44	44	1.7
-1461.824014	501.5	D14	D3	44	44.5	44.5	1.7
-1464.541534	502	D14	D3	44.5	45	45	2.5
-1467.265557	502.5	D14	D3	45	45.5	45.5	3.5
-1469.996109	503	D14	D3	45.5	46	46	3.8
-1472.733218	503.5	D14	D3	46	46.5	46.5	2.9
-1475.476908	504	D14	D3	46.5	47	47	3.1
-1478.227207	504.5	D14	D3	47	47.5	47.5	3.4
-1480.984139	505	D14	D3	47.5	48	48	3.6
-1483.747733	505.5	D14	D3	48	48.5	48.5	3.6
-1486.518012	506	D14	D3	48.5	49	49	3.7
-1489.295004	506.5	D14	D3	49	49.5	49.5	3.6
-1492.078733	507	D14	D3	49.5	50	50	3.4
-1494.869227	507.5	D14	D3	50	50.5	50.5	3.5
-1497.666509	508	D14	D3	50.5	51	51	2.1
-1500.470607	508.5	D14	D3	51	51.5	51.5	3.9

-1503.281545	509	D14	D3	51.5	52	52	4
-1506.099349	509.5	D14	D3	52	52.5	52.5	4.8
-1508.924044	510	D14	D3	52.5	53	53	5.4
-1511.755655	510.5	D14	D3	53	53.5	53.5	4.8
-1514.594209	511	D14	D3	53.5	54	54	6.6
-1517.439729	511.5	D14	D3	54	54.5	54.5	5.6
-1520.292241	512	D14	D3	54.5	55	55	6
-1523.15177	512.5	D14	D3	55	55.5	55.5	5.6
-1526.018341	513	D14	D3	55.5	56	56	5.6
-1528.891979	513.5	D14	D3	56	56.5	56.5	6.7
-1531.772708	514	D14	D3	56.5	57	57	8
-1534.660553	514.5	D14	D3	57	57.5	57.5	7.8
-1537.555539	515	D14	D3	57.5	58	58	7.1
-1540.45769	515.5	D14	D3	58	58.5	58.5	5.5
-1543.367031	516	D14	D3	58.5	59	59	5
-1546.283586	516.5	D14	D3	59	59.5	59.5	4.9
-1549.207379	517	D14	D3	59.5	60	60	5.6
-1552.138434	517.5	D14	D3	60	60.5	60.5	6.2
-1555.076777	518	D14	D3	60.5	61	61	6.1
-1558.02243	518.5	D14	D3	61	61.5	61.5	6.6
-1560.975418	519	D14	D3	61.5	62	62	6.9
-1563.935764	519.5	D14	D3	62	62.5	62.5	6.2
-1566.903493	520	D14	D3	62.5	63	63	5.9
-1569.878628	520.5	D14	D3	63	63.5	63.5	5.7
-1572.861192	521	D14	D3	63.5	64	64	6.4
-1575.85121	521.5	D14	D3	64	64.5	64.5	6
-1578.848704	522	D14	D3	64.5	65	65	6.5
-1581.853699	522.5	D14	D3	65	65.5	65.5	6.5
-1584.866217	523	D14	D3	65.5	66	66	7.1
-1587.886282	523.5	D14	D3	66	66.5	66.5	7.5
-1590.913916	524	D14	D3	66.5	67	67	6.4
-1593.949144	524.5	D14	D3	67	67.5	67.5	4.8
-1596.991987	525	D14	D3	67.5	68	68	4.4
-1600.042469	525.5	D14	D3	68	68.5	68.5	4
-1603.100612	526	D14	D3	68.5	69	69	4.2
-1606.166439	526.5	D14	D3	69	69.5	69.5	4
-1609.239974	527	D14	D3	69.5	70	70	3.4
-1612.321237	527.5	D14	D3	70	70.5	70.5	4.4
-1615.410252	528	D14	D3	70.5	71	71	5
-1618.507042	528.5	D14	D3	71	71.5	71.5	4.6
-1621.611627	529	D14	D3	71.5	72	72	4.4

-1624.724031	529.5	D14	D3	72	72.5	72.5	3.9
-1627.844276	530	D14	D3	72.5	73	73	3.6
-1630.972384	530.5	D14	D3	73	73.5	73.5	4.5
-1634.108375	531	D14	D3	73.5	74	74	4.2
-1637.252274	531.5	D14	D3	74	74.5	74.5	3.3
-1640.4041	532	D14	D3	74.5	75	75	4.1
-1643.563876	532.5	D14	D3	75	75.5	75.5	4.1
-1646.731623	533	D14	D3	75.5	76	76	3.7
-1649.907362	533.5	D14	D3	76	76.5	76.5	3.5
-1653.091116	534	D14	D3	76.5	77	77	4.2
-1656.282905	534.5	D14	D3	77	77.5	77.5	2.9
-1659.48275	535	D14	D3	77.5	78	78	2.7
-1662.690673	535.5	D14	D3	78	78.5	78.5	3.1
-1665.906694	536	D14	D3	78.5	79	79	3.1
-1669.130834	536.5	D14	D3	79	79.5	79.5	3.5
-1672.363115	537	D14	D3	79.5	80	80	3.5
-1675.603557	537.5	D14	D3	80	80.5	80.5	3.1
-1678.852179	538	D14	D3	80.5	81	81	3
-1682.109004	538.5	D14	D3	81	81.5	81.5	2.6
-1685.374051	539	D14	D3	81.5	82	82	2.1
-1688.647341	539.5	D14	D3	82	82.5	82.5	2.3
-1691.928893	540	D14	D3	82.5	83	83	2.9
-1695.218729	540.5	D14	D3	83	83.5	83.5	3.6
-1698.516867	541	D14	D3	83.5	84	84	3.2
-1701.823328	541.5	E14	D7	34	34.5	34.5	2.3
-1705.138132	542	E14	D7	34.5	35	35	2.5
-1708.461298	542.5	E14	D7	35	35.5	35.5	2.9
-1711.792847	543	E14	D7	35.5	36	36	3.1
-1715.132796	543.5	E14	D7	36	36.5	36.5	3.6
-1718.481167	544	E14	D7	36.5	37	37	3.8
-1721.837978	544.5	E14	D7	37	37.5	37.5	4.4
-1725.203248	545	E14	D7	37.5	38	38	3.9
-1728.576997	545.5	E14	D7	38	38.5	38.5	3.6
-1731.959243	546	E14	D7	38.5	39	39	3.5
-1735.350006	546.5	E14	D7	39	39.5	39.5	3.3
-1738.749304	547	E14	D7	39.5	40	40	2.9
-1742.157156	547.5	E14	D7	40	40.5	40.5	3.2
-1745.57358	548	E14	D7	40.5	41	41	3.6
-1748.998596	548.5	E14	D7	41	41.5	41.5	3.8
-1752.43222	549	E14	D7	41.5	42	42	3.6
-1755.874473	549.5	E14	D7	42	42.5	42.5	3.4

-1759.325372	550	E14	D7	42.5	43	43	4.1
-1762.784934	550.5	E14	D7	43	43.5	43.5	4.2
-1766.253178	551	E14	D7	43.5	44	44	4.9
-1769.730122	551.5	E14	D7	44	44.5	44.5	6
-1773.215784	552	E14	D7	44.5	45	45	5.8
-1776.710181	552.5	E14	D7	45	45.5	45.5	5.4
-1780.21333	553	E14	D7	45.5	46	46	4.9
-1783.725249	553.5	E14	D7	46	46.5	46.5	3.9
-1787.245956	554	E14	D7	46.5	47	47	3.6
-1790.775468	554.5	E14	D7	47	47.5	47.5	3.6
-1794.313801	555	E14	D7	47.5	48	48	3.9
-1797.860973	555.5	E14	D7	48	48.5	48.5	3.6
-1801.417001	556	E14	D7	48.5	49	49	3.7
-1804.9819	556.5	E14	D7	49	49.5	49.5	3.4
-1808.555689	557	E14	D7	49.5	50	50	3
-1812.138384	557.5	E14	D7	50	50.5	50.5	3.2
-1815.73	558	E14	D7	50.5	51	51	2.9
-1819.330555	558.5	E14	D7	51	51.5	51.5	3.4
-1822.940065	559	E14	D7	51.5	52	52	3.9
-1826.558545	559.5	E14	D7	52	52.5	52.5	4.4
-1830.186011	560	E14	D7	52.5	53	53	3.6
-1833.822481	560.5	E14	D7	53	53.5	53.5	3.6
-1837.467968	561	E14	D7	53.5	54	54	4.1
-1841.122489	561.5	E14	D7	54	54.5	54.5	4.2
-1844.78606	562	E14	D7	54.5	55	55	3.5
-1848.458696	562.5	E14	D7	55	55.5	55.5	4
-1852.140412	563	E14	D7	55.5	56	56	4
-1855.831223	563.5	E14	D7	56	56.5	56.5	3.8
-1859.531144	564	E14	D7	56.5	57	57	4
-1863.240191	564.5	E14	D7	57	57.5	57.5	4.4
-1866.958378	565	E14	D7	57.5	58	58	4.7
-1870.68572	565.5	E14	D7	58	58.5	58.5	3.9
-1874.422231	566	E14	D7	58.5	59	59	3.1
-1878.167926	566.5	E14	D7	59	59.5	59.5	4
-1881.92282	567	E14	D7	59.5	60	60	4
-1885.686926	567.5	E14	D7	60	60.5	60.5	4.7
-1889.460259	568	E14	D7	60.5	61	61	4.8
-1893.242832	568.5	E14	D7	61	61.5	61.5	4.9
-1897.03466	569	E14	D7	61.5	62	62	5.2
-1900.835757	569.5	E14	D7	62	62.5	62.5	4.4
-1904.646135	570	E14	D7	62.5	63	63	2.8

-1908.465809	570.5	E14	D7	63	63.5	63.5	2.1
-1912.294792	571	E14	D7	63.5	64	64	2.7
-1916.133097	571.5	E14	D7	64	64.5	64.5	2.6
-1919.980737	572	E14	D7	64.5	65	65	2.8
-1923.837725	572.5	E14	D7	65	65.5	65.5	2.6
-1927.704075	573	E14	D7	65.5	66	66	2.7
-1931.579799	573.5	E14	D7	66	66.5	66.5	2.4
-1935.46491	574	E14	D7	66.5	67	67	1.9
-1939.359419	574.5	E14	D7	67	67.5	67.5	2.1
-1943.263341	575	E14	D7	67.5	68	68	2.3
-1947.176686	575.5	E14	D7	68	68.5	68.5	2.7
-1951.099467	576	E14	D7	68.5	69	69	3.4
-1955.031696	576.5	E14	D7	69	69.5	69.5	3.8
-1958.973386	577	E14	D7	69.5	70	70	1.9
-1962.924547	577.5	E14	D7	70	70.5	70.5	1.7
-1966.885191	578	E14	D7	70.5	71	71	1.9
-1970.855331	578.5	E14	D7	71	71.5	71.5	2.4
-1974.834977	579	E14	D7	71.5	72	72	3.4
-1978.82414	579.5	E14	D7	72	72.5	72.5	3.1
-1982.822832	580	E14	D7	72.5	73	73	2.7
-1986.831064	580.5	E14	D7	73	73.5	73.5	3.6
-1990.848847	581	E14	D7	73.5	74	74	3.8
-1994.876191	581.5	E14	D7	74	74.5	74.5	3
-1998.913107	582	E14	D7	74.5	75	75	3.2
-2002.959605	582.5	E14	D7	75	75.5	75.5	2.1
-2007.015697	583	E14	D7	75.5	76	76	2.6
-2011.081391	583.5	E14	D7	76	76.5	76.5	2.1
-2015.156699	584	E14	D7	76.5	77	77	2
-2019.241629	584.5	E14	D7	77	77.5	77.5	2.3
-2023.336193	585	E14	D7	77.5	78	78	2.8
-2027.440399	585.5	E14	D7	78	78.5	78.5	3
-2031.554257	586	E14	D7	78.5	79	79	2.8
-2035.677778	586.5	E14	D7	79	79.5	79.5	2.7
-2039.810969	587	E14	D7	79.5	80	80	2.3
-2043.95384	587.5	E14	D7	80	80.5	80.5	3
-2048.1064	588	E14	D7	80.5	81	81	2.2
-2052.268658	588.5	E14	D7	81	81.5	81.5	2.2
-2056.440623	589	E14	D7	81.5	82	82	3.3
-2060.622303	589.5	E14	D7	82	82.5	82.5	3.8
-2064.813707	590	E14	D7	82.5	83	83	4.7
-2069.014844	590.5	E14	D7	83	83.5	83.5	4.6

-2073.22572	591	E14	D7	83.5	84	84	4.5
-2077.446345	591.5	E14	D7	84	84.5	84.5	3.9
-2081.676727	592	E14	D7	84.5	85	85	3.8
-2085.916872	592.5	E14	D7	85	85.5	85.5	4.3
-2090.16679	593	E14	D7	85.5	86	86	3.9
-2094.426487	593.5	E14	D7	86	86.5	86.5	3.3
-2098.69597	594	E14	D7	86.5	87	87	2.9
-2102.975248	594.5	E14	D7	87	87.5	87.5	3.6
-2107.264326	595	E14	D7	87.5	88	88	3.5
-2111.563212	595.5	E14	D7	88	88.5	88.5	3.7
-2115.871914	596	E14	D7	88.5	89	89	3.8
-2120.190436	596.5	E14	D7	89	89.5	89.5	3.6
-2124.518787	597	E14	D7	89.5	90	90	3.6
-2128.856972	597.5	E14	D7	90	90.5	90.5	3.9
-2133.204997	598	E14	D7	90.5	91	91	3.7
-2137.56287	598.5	D14	D4	32	32.5	32.5	4.6
-2141.930594	599	D14	D4	32.5	33	33	4.6
-2146.308178	599.5	D14	D4	33	33.5	33.5	4.7
-2150.695625	600	D14	D4	33.5	34	34	4.6
-2155.092942	600.5	D14	D4	34	34.5	34.5	5.8
-2159.500134	601	D14	D4	34.5	35	35	5.5
-2163.917206	601.5	D14	D4	35	35.5	35.5	4.1
-2168.344164	602	D14	D4	35.5	36	36	4.8
-2172.781012	602.5	D14	D4	36	36.5	36.5	4.8
-2177.227755	603	D14	D4	36.5	37	37	4.4
-2181.684397	603.5	D14	D4	37	37.5	37.5	3.9
-2186.150944	604	D14	D4	37.5	38	38	3.8
-2190.627399	604.5	D14	D4	38	38.5	38.5	3.6
-2195.113767	605	D14	D4	38.5	39	39	4.9
-2199.610051	605.5	D14	D4	39	39.5	39.5	4.5
-2204.116257	606	D14	D4	39.5	40	40	4.7
-2208.632386	606.5	D14	D4	40	40.5	40.5	4.8
-2213.158444	607	D14	D4	40.5	41	41	5
-2217.694433	607.5	D14	D4	41	41.5	41.5	5
-2222.240357	608	D14	D4	41.5	42	42	5.1
-2226.796218	608.5	D14	D4	42	42.5	42.5	4.9
-2231.362021	609	D14	D4	42.5	43	43	4.3
-2235.937767	609.5	D14	D4	43	43.5	43.5	5.2
-2240.52346	610	D14	D4	43.5	44	44	5.6
-2245.119102	610.5	D14	D4	44	44.5	44.5	6.1
-2249.724695	611	D14	D4	44.5	45	45	4.8

-2254.340241	611.5	D14	D4	45	45.5	45.5	5.1
-2258.965743	612	D14	D4	45.5	46	46	5.8
-2263.601203	612.5	D14	D4	46	46.5	46.5	5.7
-2268.246622	613	D14	D4	46.5	47	47	6.1
-2272.902003	613.5	D14	D4	47	47.5	47.5	5.7
-2277.567345	614	D14	D4	47.5	48	48	5.9
-2282.242651	614.5	D14	D4	48	48.5	48.5	6.2
-2286.927922	615	D14	D4	48.5	49	49	6
-2291.623159	615.5	D14	D4	49	49.5	49.5	5.6
-2296.328363	616	D14	D4	49.5	50	50	3.8
-2301.043534	616.5	D14	D4	50	50.5	50.5	3.2
-2305.768673	617	D14	D4	50.5	51	51	3.4
-2310.50378	617.5	D14	D4	51	51.5	51.5	3.7
-2315.248855	618	D14	D4	51.5	52	52	4.2
-2320.003899	618.5	D14	D4	52	52.5	52.5	4.7
-2324.768912	619	D14	D4	52.5	53	53	4.4
-2329.543892	619.5	D14	D4	53	53.5	53.5	4.2
-2334.32884	620	D14	D4	53.5	54	54	4.7
-2339.123755	620.5	D14	D4	54	54.5	54.5	4.3
-2343.928637	621	D14	D4	54.5	55	55	5
-2348.743483	621.5	D14	D4	55	55.5	55.5	5.8
-2353.568295	622	D14	D4	55.5	56	56	5.2
-2358.403069	622.5	D14	D4	56	56.5	56.5	4.4
-2363.247804	623	D14	D4	56.5	57	57	4.9
-2368.1025	623.5	D14	D4	57	57.5	57.5	4.6
-2372.967154	624	D14	D4	57.5	58	58	3.3
-2377.841765	624.5	D14	D4	58	58.5	58.5	3.2
-2382.726329	625	D14	D4	58.5	59	59	3.2
-2387.620846	625.5	D14	D4	59	59.5	59.5	3.4
-2392.525313	626	D14	D4	59.5	60	60	4.2
-2397.439727	626.5	D14	D4	60	60.5	60.5	4
-2402.364086	627	D14	D4	60.5	61	61	3.8
-2407.298385	627.5	D14	D4	61	61.5	61.5	4.3
-2412.242624	628	D14	D4	61.5	62	62	3.4
-2417.196798	628.5	D14	D4	62	62.5	62.5	3.4
-2422.160904	629	D14	D4	62.5	63	63	4.4
-2427.134938	629.5	D14	D4	63	63.5	63.5	4.5
-2432.118896	630	D14	D4	63.5	64	64	4.4
-2437.112776	630.5	D14	D4	64	64.5	64.5	4.3
-2442.116572	631	D14	D4	64.5	65	65	5.2
-2447.130281	631.5	D14	D4	65	65.5	65.5	4.2

-2452.153897	632	E14	D8	28	28.5	28.5	4.8
-2457.187418	632.5	E14	D8	28.5	29	29	5.2
-2462.230837	633	E14	D8	29	29.5	29.5	4.5
-2467.284149	633.5	E14	D8	29.5	30	30	4.7
-2472.347351	634	E14	D8	30	30.5	30.5	4.9
-2477.420436	634.5	E14	D8	30.5	31	31	6.2
-2482.503399	635	E14	D8	31	31.5	31.5	7.5
-2487.596235	635.5	E14	D8	31.5	32	32	5.7
-2492.698937	636	E14	D8	32	32.5	32.5	5.9
-2497.8115	636.5	E14	D8	32.5	33	33	7.4
-2502.933918	637	E14	D8	33	33.5	33.5	7.2
-2508.066184	637.5	E14	D8	33.5	34	34	8.3
-2513.208292	638	E14	D8	34	34.5	34.5	9.9
-2518.360235	638.5	E14	D8	34.5	35	35	11.7
-2523.522007	639	E14	D8	35	35.5	35.5	14.6
-2528.6936	639.5	E14	D8	35.5	36	36	13.4
-2533.875008	640	E14	D8	36	36.5	36.5	13.7
-2539.066222	640.5	E14	D8	36.5	37	37	12.6
-2544.267236	641	E14	D8	37	37.5	37.5	12.4
-2549.478041	641.5	E14	D8	37.5	38	38	12.6
-2554.698631	642	E14	D8	38	38.5	38.5	13.8
-2559.928996	642.5	E14	D8	38.5	39	39	11.8
-2565.169129	643	E14	D8	39	39.5	39.5	12
-2570.419021	643.5	E14	D8	39.5	40	40	13.6
-2575.678663	644	E14	D8	40	40.5	40.5	15
-2580.948048	644.5	E14	D8	40.5	41	41	14
-2586.227165	645	E14	D8	41	41.5	41.5	15.6
-2591.516006	645.5	E14	D8	41.5	42	42	14.9
-2596.814561	646	E14	D8	42	42.5	42.5	7.3
-2602.122822	646.5	E14	D8	42.5	43	43	5.2
-2607.440777	647	E14	D8	43	43.5	43.5	5.6
-2612.768418	647.5	E14	D8	43.5	44	44	5.6
-2618.105735	648	E14	D8	44	44.5	44.5	5.1
-2623.452717	648.5	E14	D8	44.5	45	45	5
-2628.809353	649	E14	D8	45	45.5	45.5	6.4
-2634.175634	649.5	E14	D8	45.5	46	46	5.8
-2639.551548	650	E14	D8	46	46.5	46.5	5.6
-2644.937085	650.5	E14	D8	46.5	47	47	6.8
-2650.332233	651	E14	D8	47	47.5	47.5	6.4
-2655.736981	651.5	E14	D8	47.5	48	48	6.5
-2661.151317	652	E14	D8	48	48.5	48.5	7.8

-2666.575231	652.5	E14	D8	48.5	49	49	6.7
-2672.008709	653	E14	D8	49	49.5	49.5	6.2
-2677.451741	653.5	E14	D8	49.5	50	50	6.4
-2682.904313	654	E14	D8	50	50.5	50.5	6.4
-2688.366413	654.5	E14	D8	50.5	51	51	6.2
-2693.838029	655	E14	D8	51	51.5	51.5	6.2
-2699.319148	655.5	E14	D8	51.5	52	52	5.8
-2704.809756	656	E14	D8	52	52.5	52.5	5.3
-2710.309841	656.5	E14	D8	52.5	53	53	5.4
-2715.819389	657	E14	D8	53	53.5	53.5	5.9
-2721.338388	657.5	E14	D8	53.5	54	54	5.9
-2726.866821	658	E14	D8	54	54.5	54.5	6.2
-2732.404677	658.5	E14	D8	54.5	55	55	6.1
-2737.951941	659	E14	D8	55	55.5	55.5	6.1
-2743.508598	659.5	E14	D8	55.5	56	56	6.1
-2749.074635	660	E14	D8	56	56.5	56.5	6.6
-2754.650035	660.5	E14	D8	56.5	57	57	6.7
-2760.234785	661	E14	D8	57	57.5	57.5	6.5
-2765.828869	661.5	E14	D8	57.5	58	58	6.6
-2771.432272	662	E14	D8	58	58.5	58.5	6.7
-2777.044979	662.5	E14	D8	58.5	59	59	6.8
-2782.666973	663	E14	D8	59	59.5	59.5	7.1
-2788.29824	663.5	E14	D8	59.5	60	60	7.7
-2793.938762	664	E14	D8	60	60.5	60.5	5.6
-2799.588524	664.5	E14	D8	60.5	61	61	4.8
-2805.247509	665	E14	D8	61	61.5	61.5	4.7
-2810.9157	665.5	E14	D8	61.5	62	62	6.2
-2816.593082	666	E14	D8	62	62.5	62.5	6.6
-2822.279636	666.5	E14	D8	62.5	63	63	6.4
-2827.975345	667	E14	D8	63	63.5	63.5	6.6
-2833.680192	667.5	E14	D8	63.5	64	64	6.6
-2839.394159	668	E14	D8	64	64.5	64.5	7.2
-2845.117229	668.5	E14	D8	64.5	65	65	6
-2850.849384	669	E14	D8	65	65.5	65.5	6.5
-2856.590604	669.5	E14	D8	65.5	66	66	5.8
-2862.340873	670	E14	D8	66	66.5	66.5	5.6
-2868.10017	670.5	E14	D8	66.5	67	67	6.2
-2873.868478	671	E14	D8	67	67.5	67.5	6.4
-2879.645777	671.5	E14	D8	67.5	68	68	5.3
-2885.432048	672	E14	D8	68	68.5	68.5	5.8
-2891.227272	672.5	E14	D8	68.5	69	69	5

-2897.031428	673	E14	D8	69	69.5	69.5	5.2
-2902.844498	673.5	E14	D8	69.5	70	70	6.4
-2908.666461	674	E14	D8	70	70.5	70.5	5.6
-2914.497297	674.5	E14	D8	70.5	71	71	5.2
-2920.336985	675	E14	D8	71	71.5	71.5	5.3
-2926.185505	675.5	E14	D8	71.5	72	72	4.9
-2932.042836	676	E14	D8	72	72.5	72.5	4.4
-2937.908956	676.5	E14	D8	72.5	73	73	4.3
-2943.783846	677	E14	D8	73	73.5	73.5	5.2
-2949.667482	677.5	E14	D8	73.5	74	74	4.4
-2955.559844	678	E14	D8	74	74.5	74.5	3.8
-2961.460909	678.5	E14	D8	74.5	75	75	3.6
-2967.370656	679	E14	D8	75	75.5	75.5	5.2
-2973.289061	679.5	E14	D8	75.5	76	76	5
-2979.216104	680	D14	D5	16	16.5	16.5	7.3
-2985.15176	680.5	D14	D5	16.5	17	17	7.5
-2991.096008	681	D14	D5	17	17.5	17.5	8
-2997.048823	681.5	D14	D5	17.5	18	18	8.2
-3003.010184	682	D14	D5	18	18.5	18.5	8
-3008.980065	682.5	D14	D5	18.5	19	19	7.8
-3014.958443	683	D14	D5	19	19.5	19.5	6.8
-3020.945295	683.5	D14	D5	19.5	20	20	6.4
-3026.940596	684	D14	D5	20	20.5	20.5	6.7
-3032.944321	684.5	D14	D5	20.5	21	21	6.8
-3038.956447	685	D14	D5	21	21.5	21.5	7.1
-3044.976948	685.5	D14	D5	21.5	22	22	6.8
-3051.0058	686	D14	D5	22	22.5	22.5	7.5
-3057.042976	686.5	D14	D5	22.5	23	23	7.4
-3063.088453	687	D14	D5	23	23.5	23.5	7.1
-3069.142203	687.5	D14	D5	23.5	24	24	7.5
-3075.204202	688	D14	D5	24	24.5	24.5	7.6
-3081.274422	688.5	D14	D5	24.5	25	25	7.5
-3087.352839	689	D14	D5	25	25.5	25.5	8.1
-3093.439424	689.5	D14	D5	25.5	26	26	8.7
-3099.534152	690	D14	D5	26	26.5	26.5	7.3
-3105.636996	690.5	D14	D5	26.5	27	27	7.1
-3111.747929	691	D14	D5	27	27.5	27.5	7.1
-3117.866922	691.5	D14	D5	27.5	28	28	6.6
-3123.993949	692	D14	D5	28	28.5	28.5	6.6
-3130.128981	692.5	D14	D5	28.5	29	29	6.2
-3136.271991	693	D14	D5	29	29.5	29.5	4.4

-3142.422951	693.5	D14	D5	29.5	30	30	4.5
-3148.581831	694	D14	D5	30	30.5	30.5	4.4
-3154.748604	694.5	D14	D5	30.5	31	31	4.5
-3160.92324	695	D14	D5	31	31.5	31.5	4.8
-3167.10571	695.5	D14	D5	31.5	32	32	4.5
-3173.295986	696	D14	D5	32	32.5	32.5	2.8
-3179.494036	696.5	D14	D5	32.5	33	33	2.8
-3185.699833	697	D14	D5	33	33.5	33.5	5.4
-3191.913344	697.5	D14	D5	33.5	34	34	6.8
-3198.134542	698	D14	D5	34	34.5	34.5	6.2
-3204.363394	698.5	D14	D5	34.5	35	35	6.2
-3210.59987	699	D14	D5	35	35.5	35.5	6
-3216.84394	699.5	D14	D5	35.5	36	36	5.9
-3223.095572	700	D14	D5	36	36.5	36.5	6.4
-3229.354735	700.5	D14	D5	36.5	37	37	6.1
-3235.621397	701	D14	D5	37	37.5	37.5	5.4
-3241.895527	701.5	D14	D5	37.5	38	38	6.5
-3248.177093	702	D14	D5	38	38.5	38.5	7.6
-3254.466062	702.5	D14	D5	38.5	39	39	7.7
-3260.762401	703	D14	D5	39	39.5	39.5	8.8
-3267.066079	703.5	D14	D5	39.5	40	40	7.5
-3273.377063	704	D14	D5	40	40.5	40.5	7.7
-3279.695318	704.5	D14	D5	40.5	41	41	7.6
-3286.020813	705	D14	D5	41	41.5	41.5	7.9
-3292.353513	705.5	D14	D5	41.5	42	42	7.7
-3298.693384	706	D14	D5	42	42.5	42.5	8.3
-3305.040392	706.5	E14	D9	4	4.5	4.5	9.5
-3311.394504	707	E14	D9	4.5	5	5	8.1
-3317.755684	707.5	E14	D9	5	5.5	5.5	8.1
-3324.123898	708	E14	D9	5.5	6	6	7.5
-3330.499112	708.5	E14	D9	6	6.5	6.5	7.5
-3336.881289	709	E14	D9	6.5	7	7	6.9
-3343.270394	709.5	E14	D9	7	7.5	7.5	6.9
-3349.666392	710	E14	D9	7.5	8	8	7
-3356.069247	710.5	E14	D9	8	8.5	8.5	6.8
-3362.478922	711	E14	D9	8.5	9	9	6.9
-3368.895382	711.5	E14	D9	9	9.5	9.5	6.5
-3375.31859	712	E14	D9	9.5	10	10	7.1
-3381.748509	712.5	E14	D9	10	10.5	10.5	6.5
-3388.185102	713	E14	D9	10.5	11	11	6.4
-3394.628331	713.5	E14	D9	11	11.5	11.5	6.8

-3401.07816	714	E14	D9	11.5	12	12	7.3
-3407.53455	714.5	E14	D9	12	12.5	12.5	7.6
-3413.997463	715	E14	D9	12.5	13	13	6.5
-3420.466862	715.5	E14	D9	13	13.5	13.5	7.5
-3426.942708	716	E14	D9	13.5	14	14	7.7
-3433.424961	716.5	E14	D9	14	14.5	14.5	7.9
-3439.913584	717	E14	D9	14.5	15	15	7.9
-3446.408537	717.5	E14	D9	15	15.5	15.5	9.7
-3452.909781	718	E14	D9	15.5	16	16	9.4
-3459.417275	718.5	E14	D9	16	16.5	16.5	9.5
-3465.930981	719	E14	D9	16.5	17	17	10.1
-3472.450858	719.5	E14	D9	17	17.5	17.5	10
-3478.976866	720	E14	D9	17.5	18	18	9.3
-3485.508964	720.5	E14	D9	18	18.5	18.5	8.5
-3492.047111	721	E14	D9	18.5	19	19	7.2
-3498.591266	721.5	E14	D9	19	19.5	19.5	7.6
-3505.141388	722	E14	D9	19.5	20	20	7.5
-3511.697436	722.5	E14	D9	20	20.5	20.5	7.5
-3518.259368	723	E14	D9	20.5	21	21	7.7
-3524.827141	723.5	E14	D9	21	21.5	21.5	7.7
-3531.400713	724	E14	D9	21.5	22	22	7.7
-3537.980042	724.5	E14	D9	22	22.5	22.5	7.7
-3544.565086	725	E14	D9	22.5	23	23	7.5
-3551.1558	725.5	E14	D9	23	23.5	23.5	8
-3557.752143	726	E14	D9	23.5	24	24	8.1
-3564.354069	726.5	E14	D9	24	24.5	24.5	8.4
-3570.961537	727	E14	D9	24.5	25	25	7.7
-3577.574501	727.5	E14	D9	25	25.5	25.5	7.5
-3584.192917	728	E14	D9	25.5	26	26	8.7
-3590.816742	728.5	E14	D9	26	26.5	26.5	9.7
-3597.44593	729	E14	D9	26.5	27	27	8.7
-3604.080437	729.5	E14	D9	27	27.5	27.5	9.3
-3610.720216	730	E14	D9	27.5	28	28	9.7
-3617.365223	730.5	E14	D9	28	28.5	28.5	9.5
-3624.015413	731	E14	D9	28.5	29	29	9.4
-3630.670738	731.5	E14	D9	29	29.5	29.5	9.3
-3637.331154	732	E14	D9	29.5	30	30	8.7
-3643.996613	732.5	E14	D9	30	30.5	30.5	8.1
-3650.667069	733	E14	D9	30.5	31	31	8.4
-3657.342475	733.5	E14	D9	31	31.5	31.5	8
-3664.022783	734	E14	D9	31.5	32	32	7.4

-3670.707947	734.5	E14	D9	32	32.5	32.5	7.1
-3677.397918	735	E14	D9	32.5	33	33	7.6
-3684.092649	735.5	E14	D9	33	33.5	33.5	8.6
-3690.792092	736	E14	D9	33.5	34	34	7.9
-3697.496198	736.5	E14	D9	34	34.5	34.5	8.4
-3704.204918	737	E14	D9	34.5	35	35	9.2
-3710.918203	737.5	E14	D9	35	35.5	35.5	9.7
-3717.636005	738	E14	D9	35.5	36	36	10.3
-3724.358274	738.5	E14	D9	36	36.5	36.5	10.5
-3731.08496	739	E14	D9	36.5	37	37	11
-3737.816013	739.5	E14	D9	37	37.5	37.5	11.1
-3744.551382	740	E14	D9	37.5	38	38	11.5
-3751.291019	740.5	E14	D9	38	38.5	38.5	10.8
-3758.034871	741	E14	D9	38.5	39	39	11.4
-3764.782888	741.5	E14	D9	39	39.5	39.5	11.5
-3771.535019	742	E14	D9	39.5	40	40	11.5
-3778.291212	742.5	E14	D9	40	40.5	40.5	10.9
-3785.051415	743	E14	D9	40.5	41	41	10.5
-3791.815577	743.5	E14	D9	41	41.5	41.5	8.6
-3798.583645	744	E14	D9	41.5	42	42	8.1
-3805.355566	744.5	E14	D9	42	42.5	42.5	8.7
-3812.131289	745	E14	D9	42.5	43	43	8.7
-3818.910759	745.5	E14	D9	43	43.5	43.5	8.9
-3825.693924	746	E14	D9	43.5	44	44	8.9
-3832.48073	746.5	E14	D9	44	44.5	44.5	8.4
-3839.271123	747	E14	D9	44.5	45	45	8.8
-3846.065049	747.5	E14	D9	45	45.5	45.5	8.9
-3852.862454	748	E14	D9	45.5	46	46	8.9
-3859.663284	748.5	E14	D9	46	46.5	46.5	8.9
-3866.467483	749	E14	D9	46.5	47	47	9.6
-3873.274996	749.5	E14	D9	47	47.5	47.5	10.1
-3880.085768	750	E14	D9	47.5	48	48	10.4
-3886.899743	750.5	E14	D9	48	48.5	48.5	10.9
-3893.716866	751	E14	D9	48.5	49	49	11
-3900.53708	751.5	E14	D9	49	49.5	49.5	10.7
-3907.360329	752	E14	D9	49.5	50	50	10.7
-3914.186556	752.5	E14	D9	50	50.5	50.5	9.5
-3921.015705	753	E14	D9	50.5	51	51	9.7
-3927.847717	753.5	E14	D9	51	51.5	51.5	9.5
-3934.682536	754	E14	D9	51.5	52	52	9.5
-3941.520104	754.5	E14	D9	52	52.5	52.5	9.3

-3948.360362	755	E14	D9	52.5	53	53	9.8
-3955.203253	755.5	E14	D9	53	53.5	53.5	8.9
-3962.048718	756	E14	D9	53.5	54	54	9.4
-3968.896698	756.5	E14	D9	54	54.5	54.5	9.8
-3975.747134	757	E14	D9	54.5	55	55	9.6
-3982.599967	757.5	E14	D9	55	55.5	55.5	9.5
-3989.455137	758	E14	D9	55.5	56	56	9.4
-3996.312584	758.5	E14	D9	56	56.5	56.5	8.9
-4003.172248	759	E14	D9	56.5	57	57	9.6
-4010.034069	759.5	E14	D9	57	57.5	57.5	9.4
-4016.897986	760	E14	D9	57.5	58	58	8.7
-4023.763938	760.5	E14	D9	58	58.5	58.5	8.2
-4030.631863	761	E14	D9	58.5	59	59	7.9
-4037.501701	761.5	E14	D9	59	59.5	59.5	8.9
-4044.373389	762	E14	D9	59.5	60	60	8.5
-4051.246866	762.5	E14	D9	60	60.5	60.5	9.1
-4058.122069	763	E14	D9	60.5	61	61	8.5
-4064.998936	763.5	E14	D9	61	61.5	61.5	8.4
-4071.877403	764	E14	D9	61.5	62	62	9.1
-4078.757408	764.5	E14	D9	62	62.5	62.5	9.8
-4085.638887	765	E14	D9	62.5	63	63	8.7
-4092.521776	765.5	E14	D9	63	63.5	63.5	10.2
-4099.406012	766	E14	D9	63.5	64	64	9.8
-4106.29153	766.5	E14	D9	64	64.5	64.5	9.3
-4113.178266	767	E14	D9	64.5	65	65	9.3
-4120.066155	767.5	E14	D9	65	65.5	65.5	8.6
-4126.955131	768	E14	D9	65.5	66	66	9
-4133.845131	768.5	E14	D9	66	66.5	66.5	9.5
-4140.736087	769	E14	D9	66.5	67	67	9.2
-4147.627934	769.5	E14	D9	67	67.5	67.5	9.7
-4154.520607	770	E14	D9	67.5	68	68	10.4
-4161.414037	770.5	E14	D9	68	68.5	68.5	9.5
-4168.30816	771	E14	D9	68.5	69	69	9.8
-4175.202907	771.5	E14	D9	69	69.5	69.5	8.5
-4182.098211	772	E14	D9	69.5	70	70	7.9
-4188.994006	772.5	E14	D9	70	70.5	70.5	8.1
-4195.890222	773	E14	D9	70.5	71	71	8.3
-4202.786793	773.5	E14	D9	71	71.5	71.5	7.3
-4209.683649	774	E14	D9	71.5	72	72	8.1
-4216.580721	774.5	E14	D9	72	72.5	72.5	8.9
-4223.477942	775	E14	D9	72.5	73	73	9.5

-4230.375241	775.5	E14	D9	73	73.5	73.5	8.5
-4237.272549	776	E14	D9	73.5	74	74	8.4
-4244.169797	776.5	E14	D9	74	74.5	74.5	8.3
-4251.066913	777	E14	D9	74.5	75	75	9.8
-4257.963829	777.5	E14	D9	75	75.5	75.5	10.1
-4264.860472	778	E14	D9	75.5	76	76	11
-4271.756773	778.5	E14	D9	76	76.5	76.5	11.8
-4278.65266	779	E14	D9	76.5	77	77	11.6
-4285.548061	779.5	E14	D9	77	77.5	77.5	12.3
-4292.442905	780	E14	D9	77.5	78	78	12.6
-4299.337119	780.5	E14	D9	78	78.5	78.5	12.1
-4306.230631	781	E14	D9	78.5	79	79	12
-4313.123369	781.5	E14	D9	79	79.5	79.5	9.7
-4320.01526	782	E14	D9	79.5	80	80	9.8
-4326.906229	782.5	E14	D9	80	80.5	80.5	10.5
-4333.796205	783	E14	D9	80.5	81	81	11.6
-4340.685112	783.5	E14	D9	81	81.5	81.5	9.3
-4347.572878	784	E14	D9	81.5	82	82	8.6
-4354.459426	784.5	E14	D9	82	82.5	82.5	8.5
-4361.344684	785	E14	D9	82.5	83	83	8.9
-4368.228575	785.5	E14	D9	83	83.5	83.5	9.4
-4375.111025	786	E14	D9	83.5	84	84	9.5
-4381.991958	786.5	E14	D9	84	84.5	84.5	9.1
-4388.871298	787	E14	D9	84.5	85	85	8.4
-4395.748969	787.5	E14	D9	85	85.5	85.5	6.8
-4402.624895	788	E14	D9	85.5	86	86	6.1
-4409.498999	788.5	E14	D9	86	86.5	86.5	6.8
-4416.371203	789	E14	D9	86.5	87	87	6.8
-4423.241431	789.5	E14	D9	87	87.5	87.5	7.6
-4430.109606	790	E14	D9	87.5	88	88	7.6
-4436.975648	790.5	E14	D9	88	88.5	88.5	8.1
-4443.83948	791	E14	D9	88.5	89	89	7.5
-4450.701023	791.5	E14	D9	89	89.5	89.5	6.9
-4457.560199	792	E14	D9	89.5	90	90	6.7
-4464.416929	792.5	E14	D9	90	90.5	90.5	6.6
-4471.271133	793	E14	D9	90.5	91	91	5.9
-4478.122732	793.5	E14	D9	91	91.5	91.5	4.2
-4484.971645	794	E14	D9	91.5	92	92	2.3
-4491.817792	794.5	E14	D9	92	92.5	92.5	3.4
-4498.661094	795	E14	D9	92.5	93	93	3.8
-4505.501468	795.5	E14	D9	93	93.5	93.5	3.8

-4512.338834	796	E14	D9	93.5	94	94	3.4
-4519.173111	796.5	D14	D6	30	30.5	30.5	6.6
-4526.004216	797	D14	D6	30.5	31	31	6.9
-4532.832067	797.5	D14	D6	31	31.5	31.5	7
-4539.656583	798	D14	D6	31.5	32	32	7.1
-4546.477681	798.5	D14	D6	32	32.5	32.5	7.1
-4553.295277	799	D14	D6	32.5	33	33	6.4
-4560.109288	799.5	D14	D6	33	33.5	33.5	7.3
-4566.919632	800	D14	D6	33.5	34	34	6.9
-4573.726223	800.5	D14	D6	34	34.5	34.5	8.1
-4580.528979	801	D14	D6	34.5	35	35	8.5
-4587.327813	801.5	D14	D6	35	35.5	35.5	8.1
-4594.122643	802	D14	D6	35.5	36	36	9.5
-4600.913382	802.5	D14	D6	36	36.5	36.5	10
-4607.699945	803	D14	D6	36.5	37	37	11.2
-4614.482247	803.5	D14	D6	37	37.5	37.5	12.4
-4621.260201	804	D14	D6	37.5	38	38	10.6
-4628.033722	804.5	D14	D6	38	38.5	38.5	7.9
-4634.802723	805	D14	D6	38.5	39	39	7
-4641.567116	805.5	D14	D6	39	39.5	39.5	7.1
-4648.326815	806	D14	D6	39.5	40	40	6.9
-4655.081733	806.5	D14	D6	40	40.5	40.5	6.5
-4661.831781	807	D14	D6	40.5	41	41	7.2
-4668.576871	807.5	D14	D6	41	41.5	41.5	7.7
-4675.316915	808	D14	D6	41.5	42	42	7.5
-4682.051824	808.5	D14	D6	42	42.5	42.5	9.7
-4688.781509	809	D14	D6	42.5	43	43	9.5
-4695.505881	809.5	D14	D6	43	43.5	43.5	8.4
-4702.224851	810	D14	D6	43.5	44	44	7.9
-4708.938327	810.5	D14	D6	44	44.5	44.5	8.7
-4715.64622	811	D14	D6	44.5	45	45	10.9
-4722.34844	811.5	D14	D6	45	45.5	45.5	11.8
-4729.044895	812	D14	D6	45.5	46	46	10
-4735.735494	812.5	D14	D6	46	46.5	46.5	10
-4742.420146	813	D14	D6	46.5	47	47	9.6
-4749.098759	813.5	D14	D6	47	47.5	47.5	9.6
-4755.771241	814	D14	D6	47.5	48	48	9.5
-4762.437499	814.5	D14	D6	48	48.5	48.5	9.7
-4769.09744	815	D14	D6	48.5	49	49	9.8
-4775.750972	815.5	D14	D6	49	49.5	49.5	10.1
-4782.398002	816	D14	D6	49.5	50	50	8.6

-4789.038434	816.5	D14	D6	50	50.5	50.5	8.7
-4795.672176	817	D14	D6	50.5	51	51	8.4
-4802.299133	817.5	D14	D6	51	51.5	51.5	7.5
-4808.919211	818	D14	D6	51.5	52	52	8
-4815.532313	818.5	D14	D6	52	52.5	52.5	7.9
-4822.138346	819	D14	D6	52.5	53	53	7.9
-4828.737214	819.5	D14	D6	53	53.5	53.5	8.7
-4835.32882	820	D14	D6	53.5	54	54	9.5
-4841.913069	820.5	D14	D6	54	54.5	54.5	9.1
-4848.489863	821	D14	D6	54.5	55	55	8.8
-4855.059107	821.5	D14	D6	55	55.5	55.5	9.3
-4861.620702	822	D14	D6	55.5	56	56	9.9
-4868.174552	822.5	D14	D6	56	56.5	56.5	9.5
-4874.720558	823	D14	D6	56.5	57	57	10.3
-4881.258623	823.5	D14	D6	57	57.5	57.5	10.7
-4887.788647	824	D14	D6	57.5	58	58	11.6
-4894.310533	824.5	D14	D6	58	58.5	58.5	11
-4900.824181	825	D14	D6	58.5	59	59	9.5
-4907.329491	825.5	D14	D6	59	59.5	59.5	11.2
-4913.826364	826	D14	D6	59.5	60	60	11.2
-4920.3147	826.5	D14	D6	60	60.5	60.5	10.1
-4926.794399	827	D14	D6	60.5	61	61	9.3
-4933.265359	827.5	D14	D6	61	61.5	61.5	10.4
-4939.727479	828	D14	D6	61.5	62	62	9.9
-4946.180659	828.5	D14	D6	62	62.5	62.5	9.9
-4952.624797	829	D14	D6	62.5	63	63	9.9
-4959.05979	829.5	D14	D6	63	63.5	63.5	10.6
-4965.485537	830	D14	D6	63.5	64	64	10.3
-4971.901934	830.5	D14	D6	64	64.5	64.5	10.8
-4978.308879	831	D14	D6	64.5	65	65	11.1
-4984.706269	831.5	D14	D6	65	65.5	65.5	12.6
-4991.093999	832	D14	D6	65.5	66	66	12.5
-4997.471965	832.5	D14	D6	66	66.5	66.5	11.4
-5003.840065	833	D14	D6	66.5	67	67	12.6
-5010.198192	833.5	D14	D6	67	67.5	67.5	12.6
-5016.546242	834	D14	D6	67.5	68	68	14.6
-5022.884109	834.5	D14	D6	68	68.5	68.5	13.7
-5029.211689	835	D14	D6	68.5	69	69	13.2
-5035.528875	835.5	D14	D6	69	69.5	69.5	11.4
-5041.835561	836	D14	D6	69.5	70	70	11.2
-5048.13164	836.5	D14	D6	70	70.5	70.5	12.4

-5054.417005	837	D14	D6	70.5	71	71	11.5
-5060.69155	837.5	D14	D6	71	71.5	71.5	9
-5066.955166	838	D14	D6	71.5	72	72	8.4
-5073.207745	838.5	D14	D6	72	72.5	72.5	9.2
-5079.449181	839	D14	D6	72.5	73	73	8.5
-5085.679363	839.5	D14	D6	73	73.5	73.5	11.2
-5091.898182	840	D14	D6	73.5	74	74	10.6
-5098.105531	840.5	D14	D6	74	74.5	74.5	7.4
-5104.301299	841	D14	D6	74.5	75	75	6.9
-5110.485375	841.5	D14	D6	75	75.5	75.5	7
-5116.657651	842	D14	D6	75.5	76	76	8.9
-5122.818016	842.5	D14	D6	76	76.5	76.5	8.6
-5128.966357	843	D14	D6	76.5	77	77	7.7
-5135.102565	843.5	D14	D6	77	77.5	77.5	8.3
-5141.226528	844	D14	D6	77.5	78	78	8.1
-5147.338133	844.5	D14	D6	78	78.5	78.5	9.2
-5153.437269	845	D14	D6	78.5	79	79	10.5
-5159.523823	845.5	D14	D6	79	79.5	79.5	13.4
-5165.597682	846	D14	D6	79.5	80	80	12.4
-5171.658732	846.5	D14	D6	80	80.5	80.5	12.4
-5177.706861	847	D14	D6	80.5	81	81	11.3
-5183.741954	847.5	D14	D6	81	81.5	81.5	10.3
-5189.763896	848	D14	D6	81.5	82	82	11.4
-5195.772574	848.5	D14	D6	82	82.5	82.5	9.8
-5201.767873	849	D14	D6	82.5	83	83	8.5
-5207.749676	849.5	D14	D6	83	83.5	83.5	9.2
-5213.717869	850	D14	D6	83.5	84	84	9
-5219.672335	850.5	D14	D6	84	84.5	84.5	9.4
-5225.612958	851	D14	D6	84.5	85	85	10.8
-5231.539622	851.5	D14	D6	85	85.5	85.5	11.8
-5237.452209	852	D14	D6	85.5	86	86	11
-5243.350603	852.5	D14	D6	86	86.5	86.5	9.3
-5249.234684	853	D14	D6	86.5	87	87	9.5
-5255.104336	853.5	D14	D6	87	87.5	87.5	9
-5260.959441	854	D14	D6	87.5	88	88	9.5
-5266.799878	854.5	D14	D6	88	88.5	88.5	8
-5272.625529	855	D14	D6	88.5	89	89	8.1
-5278.436276	855.5	D14	D6	89	89.5	89.5	8.3
-5284.231997	856	D14	D6	89.5	90	90	7.5
-5290.012574	856.5	D14	D6	90	90.5	90.5	7.7
-5295.777885	857	D14	D6	90.5	91	91	7.7

-5301.52781	857.5	E14	D10	64	64.5	64.5	5
-5307.262227	858	E14	D10	64.5	65	65	4.2
-5312.981016	858.5	E14	D10	65	65.5	65.5	4.4
-5318.684053	859	E14	D10	65.5	66	66	4.6
-5324.371218	859.5	E14	D10	66	66.5	66.5	2.7
-5330.042388	860	E14	D10	66.5	67	67	2.5
-5335.697439	860.5	E14	D10	67	67.5	67.5	3
-5341.336249	861	E14	D10	67.5	68	68	3.2
-5346.958694	861.5	E14	D10	68	68.5	68.5	2.9
-5352.564649	862	E14	D10	68.5	69	69	2.6
-5358.153992	862.5	E14	D10	69	69.5	69.5	2.6
-5363.726596	863	E14	D10	69.5	70	70	1.7
-5369.282338	863.5	E14	D10	70	70.5	70.5	2.2
-5374.821091	864	E14	D10	70.5	71	71	1.5
-5380.342731	864.5	E14	D10	71	71.5	71.5	0.9
-5385.847131	865	E14	D10	71.5	72	72	0.9
-5391.334164	865.5	E14	D10	72	72.5	72.5	-0.1
-5396.803705	866	E14	D10	72.5	73	73	1.5
-5402.255625	866.5	E14	D10	73	73.5	73.5	1.2
-5407.689798	867	E14	D10	73.5	74	74	1.3
-5413.106095	867.5	E14	D10	74	74.5	74.5	2.1
-5418.50439	868	E14	D10	74.5	75	75	2.2
-5423.884552	868.5	E14	D10	75	75.5	75.5	2.1
-5429.246453	869	E14	D10	75.5	76	76	4.6
-5434.589964	869.5	E14	D10	76	76.5	76.5	3.4
-5439.914956	870	E14	D10	76.5	77	77	3.3
-5445.221298	870.5	E14	D10	77	77.5	77.5	2.6
-5450.50886	871	E14	D10	77.5	78	78	1.5
-5455.777512	871.5	E14	D10	78	78.5	78.5	0.6
-5461.027122	872	E14	D10	78.5	79	79	1.2
-5466.257559	872.5	E14	D10	79	79.5	79.5	1.3
-5471.468692	873	E14	D10	79.5	80	80	2.5
-5476.660389	873.5	E14	D10	80	80.5	80.5	2.3
-5481.832516	874	E14	D10	80.5	81	81	2.3
-5486.984941	874.5	E14	D10	81	81.5	81.5	4.8
-5492.117532	875	E14	D10	81.5	82	82	3.6
-5497.230154	875.5	E14	D10	82	82.5	82.5	3.6
-5502.322673	876	E14	D10	82.5	83	83	3.6
-5507.394956	876.5	E14	D10	83	83.5	83.5	2.1
-5512.446868	877	E14	D10	83.5	84	84	2.4
-5517.478274	877.5	E14	D10	84	84.5	84.5	2.3

-5522.489038	878	E14	D10	84.5	85	85	3.4
-5527.479025	878.5	E14	D10	85	85.5	85.5	4.4
-5532.448099	879	E14	D10	85.5	86	86	5
-5537.396123	879.5	E14	D10	86	86.5	86.5	4
-5542.322961	880	E14	D10	86.5	87	87	4.1
-5547.228475	880.5	E14	D10	87	87.5	87.5	4.6
-5552.112529	881	E14	D10	87.5	88	88	4.7
-5556.974983	881.5	E14	D10	88	88.5	88.5	5.4
-5561.8157	882	E14	D10	88.5	89	89	5.5
-5566.634542	882.5	E14	D10	89	89.5	89.5	9.8
-5571.431369	883	E14	D10	89.5	90	90	19.8
-5576.206042	883.5	E14	D10	90	90.5	90.5	3.6
-5580.958421	884	E14	D10	90.5	91	91	0.3
-5585.688366	884.5	E14	D10	91	91.5	91.5	-0.1
-5590.395738	885	E14	D10	91.5	92	92	1.5
-5595.080394	885.5	E14	D10	92	92.5	92.5	7.9
-5599.742194	886	E14	D10	92.5	93	93	3.1
-5604.380997	886.5	E14	D10	93	93.5	93.5	6.1
-5608.996659	887	E14	D10	93.5	94	94	1
-5613.58904	887.5	E14	D10	94	94.5	94.5	5.4
-5618.157997	888	E14	D10	94.5	95	95	1.1
-5622.703386	888.5	E14	D10	95	95.5	95.5	1.2
-5627.225063	889	E14	D10	95.5	96	96	1.9
-5631.722887	889.5	E14	D10	96	96.5	96.5	2.3
-5636.196711	890	E14	D10	96.5	97	97	8.9
-5640.646392	890.5	E14	D10	97	97.5	97.5	3.3
-5645.071785	891	E14	D10	97.5	98	98	23
-5649.472745	891.5	E14	D10	98	98.5	98.5	22.1
1950							
-10688.1083	892.5	D14	D7	24	24.5	24.5	12
-10695.577	893	D14	D7	24.5	25	25	13.8
-10703.04054	893.5	D14	D7	25	25.5	25.5	18.9
-10710.49894	894	D14	D7	25.5	26	26	31.2
-10717.95218	894.5	D14	D7	26	26.5	26.5	37.9
-10725.40028	895	D14	D7	26.5	27	27	34.9
-10732.84322	895.5	D14	D7	27	27.5	27.5	23.9
-10740.28101	896	D14	D7	27.5	28	28	15.3
-10747.71365	896.5	D14	D7	28	28.5	28.5	13.3
-10755.14114	897	D14	D7	28.5	29	29	12.6
-10762.56348	897.5	D14	D7	29	29.5	29.5	10.6
-10769.98066	898	D14	D7	29.5	30	30	10.7

-10777.3927	898.5	D14	D7	30	30.5	30.5	10.3
-10784.79958	899	D14	D7	30.5	31	31	11
-10792.20132	899.5	D14	D7	31	31.5	31.5	11
-10799.5979	900	D14	D7	31.5	32	32	11.1
-10806.98933	900.5	D14	D7	32	32.5	32.5	11.9
-10814.37561	901	D14	D7	32.5	33	33	10.9
-10821.75674	901.5	D14	D7	33	33.5	33.5	11.2
-10829.13272	902	D14	D7	33.5	34	34	11
-10836.50355	902.5	D14	D7	34	34.5	34.5	11.4
-10843.86922	903	D14	D7	34.5	35	35	11.8
-10851.22975	903.5	D14	D7	35	35.5	35.5	11.1
-10858.58512	904	D14	D7	35.5	36	36	10.7
-10865.93535	904.5	D14	D7	36	36.5	36.5	10.5
-10873.28042	905	D14	D7	36.5	37	37	11.7
-10880.62034	905.5	D14	D7	37	37.5	37.5	12.3
-10887.95511	906	D14	D7	37.5	38	38	11.2
-10895.28473	906.5	D14	D7	38	38.5	38.5	11.1
-10902.6092	907	D14	D7	38.5	39	39	11
-10909.92851	907.5	D14	D7	39	39.5	39.5	11.1
-10917.24268	908	D14	D7	39.5	40	40	11.3
-10924.55169	908.5	D14	D7	40	40.5	40.5	11.8
-10931.85556	909	D14	D7	40.5	41	41	11.6
-10939.15427	909.5	D14	D7	41	41.5	41.5	11.8
-10946.44783	910	D14	D7	41.5	42	42	11.4
-10953.73624	910.5	D14	D7	42	42.5	42.5	11.6
-10961.0195	911	D14	D7	42.5	43	43	12.4
-10968.29761	911.5	D14	D7	43	43.5	43.5	11.8
-10975.57056	912	D14	D7	43.5	44	44	12
-10982.83837	912.5	D14	D7	44	44.5	44.5	11.4
-10990.10102	913	D14	D7	44.5	45	45	11.8
-10997.35853	913.5	D14	D7	45	45.5	45.5	12
-11004.61088	914	D14	D7	45.5	46	46	12.2
-11011.85808	914.5	D14	D7	46	46.5	46.5	12.6
-11019.10013	915	D14	D7	46.5	47	47	12.6
-11026.33703	915.5	D14	D7	47	47.5	47.5	12.3
-11033.56878	916	D14	D7	47.5	48	48	12.6
-11040.79538	916.5	D14	D7	48	48.5	48.5	12.3
-11048.01682	917	D14	D7	48.5	49	49	12.3
-11055.23312	917.5	D14	D7	49	49.5	49.5	12.1
-11062.44426	918	D14	D7	49.5	50	50	11.3
-11069.65026	918.5	D14	D7	50	50.5	50.5	11.6

-11076.8511	919	D14	D7	50.5	51	51	11.3
-11084.04679	919.5	D14	D7	51	51.5	51.5	12.1
-11091.23733	920	D14	D7	51.5	52	52	11.2
-11098.42272	920.5	D14	D7	52	52.5	52.5	10.9
-11105.60296	921	D14	D7	52.5	53	53	10.5
-11112.77804	921.5	D14	D7	53	53.5	53.5	10.6
-11119.94798	922	D14	D7	53.5	54	54	10.9
-11127.11276	922.5	D14	D7	54	54.5	54.5	11.6
-11134.2724	923	D14	D7	54.5	55	55	10.3
-11141.42688	923.5	D14	D7	55	55.5	55.5	9.1
-11148.57621	924	D14	D7	55.5	56	56	9.1
-11155.72039	924.5	D14	D7	56	56.5	56.5	9.8
-11162.85942	925	D14	D7	56.5	57	57	10.5
-11169.9933	925.5	D14	D7	57	57.5	57.5	12.7
-11177.12202	926	D14	D7	57.5	58	58	12.1
-11184.2456	926.5	D14	D7	58	58.5	58.5	12.6
-11191.36403	927	D14	D7	58.5	59	59	12
-11198.4773	927.5	D14	D7	59	59.5	59.5	12.5
-11205.58542	928	D14	D7	59.5	60	60	13
-11212.68839	928.5	D14	D7	60	60.5	60.5	12.3
-11219.78621	929	D14	D7	60.5	61	61	12.6
-11226.87888	929.5	D14	D7	61	61.5	61.5	11.4
-11233.9664	930	D14	D7	61.5	62	62	12.5
-11241.04877	930.5	D14	D7	62	62.5	62.5	12.7
-11248.12599	931	D14	D7	62.5	63	63	12.4
-11255.19805	931.5	D14	D7	63	63.5	63.5	11.8
-11262.26497	932	D14	D7	63.5	64	64	12
-11269.32673	932.5	D14	D7	64	64.5	64.5	12.6
-11276.38334	933	D14	D7	64.5	65	65	12.7
-11283.4348	933.5	D14	D7	65	65.5	65.5	11.4
-11290.48111	934	D14	D7	65.5	66	66	12.7
-11297.52227	934.5	D14	D7	66	66.5	66.5	13.3
-11304.55828	935	D14	D7	66.5	67	67	12.4
-11311.58913	935.5	D14	D7	67	67.5	67.5	10.9
-11318.61484	936	D14	D7	67.5	68	68	9.5
-11325.63539	936.5	D14	D7	68	68.5	68.5	8.9
-11332.6508	937	D14	D7	68.5	69	69	8.8
-11339.66105	937.5	D14	D7	69	69.5	69.5	10.2
-11346.66615	938	D14	D7	69.5	70	70	9.3
-11353.6661	938.5	E14	D11	52	52.5	52.5	10.1
-11360.6609	939	E14	D11	52.5	53	53	8.6

-11367.65055	939.5	E14	D11	53	53.5	53.5	6.9
-11374.63505	940	E14	D11	53.5	54	54	6.4
-11381.61439	940.5	E14	D11	54	54.5	54.5	6.9
-11388.58859	941	E14	D11	54.5	55	55	6.6
-11395.55763	941.5	E14	D11	55	55.5	55.5	7.3
-11402.52152	942	E14	D11	55.5	56	56	7.8
-11409.48027	942.5	E14	D11	56	56.5	56.5	7.9
-11416.43386	943	E14	D11	56.5	57	57	7.5
-11423.3823	943.5	E14	D11	57	57.5	57.5	7.5
-11430.32558	944	E14	D11	57.5	58	58	7.9
-11437.26372	944.5	E14	D11	58	58.5	58.5	8.1
-11444.19671	945	E14	D11	58.5	59	59	8.3
-11451.12454	945.5	E14	D11	59	59.5	59.5	8.9
-11458.04723	946	E14	D11	59.5	60	60	9.7
-11464.96476	946.5	E14	D11	60	60.5	60.5	10.3
-11471.87714	947	E14	D11	60.5	61	61	9.5
-11478.78437	947.5	E14	D11	61	61.5	61.5	9.3
-11485.68645	948	E14	D11	61.5	62	62	9.6
-11492.58338	948.5	E14	D11	62	62.5	62.5	10.2
-11499.47516	949	E14	D11	62.5	63	63	9.6
-11506.36179	949.5	E14	D11	63	63.5	63.5	10
-11513.24326	950	E14	D11	63.5	64	64	10.2
-11520.11959	950.5	E14	D11	64	64.5	64.5	10.2
-11526.99076	951	E14	D11	64.5	65	65	11.2
-11533.85678	951.5	E14	D11	65	65.5	65.5	11.5
-11540.71765	952	E14	D11	65.5	66	66	11.1
-11547.57337	952.5	E14	D11	66	66.5	66.5	11.3
-11554.42394	953	E14	D11	66.5	67	67	11.6
-11561.26936	953.5	E14	D11	67	67.5	67.5	11.1
-11568.10963	954	E14	D11	67.5	68	68	10.6
-11574.94474	954.5	E14	D11	68	68.5	68.5	10.5
-11581.77471	955	E14	D11	68.5	69	69	10.4
-11588.59952	955.5	E14	D11	69	69.5	69.5	10.5
-11595.41919	956	E14	D11	69.5	70	70	10.7
-11602.2337	956.5	E14	D11	70	70.5	70.5	10.5
-11609.04306	957	E14	D11	70.5	71	71	10.7
-11615.84727	957.5	E14	D11	71	71.5	71.5	11.1
-11622.64633	958	E14	D11	71.5	72	72	11
-11629.44023	958.5	E14	D11	72	72.5	72.5	10.5
-11636.22899	959	E14	D11	72.5	73	73	10.7
-11643.0126	959.5	E14	D11	73	73.5	73.5	10.1

-11649.79105	960	E14	D11	73.5	74	74	10.7
-11656.56435	960.5	E14	D11	74	74.5	74.5	9.7
-11663.3325	961	E14	D11	74.5	75	75	9.7
-11670.09551	961.5	E14	D11	75	75.5	75.5	9.7
-11676.85336	962	E14	D11	75.5	76	76	10.1
-11683.60605	962.5	E14	D11	76	76.5	76.5	9.8
-11690.3536	963	E14	D11	76.5	77	77	9.6
-11697.096	963.5	E14	D11	77	77.5	77.5	10.5
-11703.83324	964	E14	D11	77.5	78	78	10.9
-11710.56534	964.5	E14	D11	78	78.5	78.5	10.5
-11717.29228	965	E14	D11	78.5	79	79	10.5
-11724.01408	965.5	E14	D11	79	79.5	79.5	10.8
-11730.73072	966	E14	D11	79.5	80	80	11
-11737.44221	966.5	E14	D11	80	80.5	80.5	11.1
-11744.14855	967	E14	D11	80.5	81	81	11.6
-11750.84973	967.5	E14	D11	81	81.5	81.5	11.2
-11757.54577	968	E14	D11	81.5	82	82	11.6
-11764.23666	968.5	E14	D11	82	82.5	82.5	11.3
-11770.92239	969	E14	D11	82.5	83	83	11.8
-11777.60298	969.5	E14	D11	83	83.5	83.5	12.8
-11784.27841	970	E14	D11	83.5	84	84	11.8
-11790.94869	970.5	E14	D11	84	84.5	84.5	12.3
-11797.61382	971	E14	D11	84.5	85	85	12.9
-11804.2738	971.5	E14	D11	85	85.5	85.5	13.1
-11810.92863	972	E14	D11	85.5	86	86	14.8
-11817.57831	972.5	E14	D11	86	86.5	86.5	14.2
-11824.22283	973	E14	D11	86.5	87	87	12.8
-11830.86221	973.5	E14	D11	87	87.5	87.5	12.6
-11837.49643	974	E14	D11	87.5	88	88	12.4
-11844.12551	974.5	E14	D11	88	88.5	88.5	12.3
-11850.74943	975	E14	D11	88.5	89	89	12.3
-11857.3682	975.5	E14	D11	89	89.5	89.5	12.4
-11863.98182	976	E14	D11	89.5	90	90	11.8
-11870.59029	976.5	E14	D11	90	90.5	90.5	11
-11877.19361	977	E14	D11	90.5	91	91	11
-11883.79177	977.5	E14	D11	91	91.5	91.5	10.4
-11890.38479	978	E14	D11	91.5	92	92	11.1
-11896.97265	978.5	E14	D11	92	92.5	92.5	10.9
-11903.55537	979	E14	D11	92.5	93	93	11.3
-11910.13293	979.5	E14	D11	93	93.5	93.5	11.1
-11916.70534	980	E14	D11	93.5	94	94	11.4

-11923.2726	980.5	E14	D11	94	94.5	94.5	10.9
-11929.83471	981	E14	D11	94.5	95	95	10.5
-11936.39167	981.5	D14	D8	22	22.5	22.5	10.1
-11942.94348	982	D14	D8	22.5	23	23	9.5
-11949.49013	982.5	D14	D8	23	23.5	23.5	8.9
-11956.03164	983	D14	D8	23.5	24	24	9.9
-11962.56799	983.5	D14	D8	24	24.5	24.5	11.8
-11969.09919	984	D14	D8	24.5	25	25	13.3
-11975.62524	984.5	D14	D8	25	25.5	25.5	13.9
-11982.14615	985	D14	D8	25.5	26	26	14.2
-11988.6619	985.5	D14	D8	26	26.5	26.5	13.3
-11995.17249	986	D14	D8	26.5	27	27	12.8
-12001.67794	986.5	D14	D8	27	27.5	27.5	12
-12008.17824	987	D14	D8	27.5	28	28	11.7
-12014.67338	987.5	D14	D8	28	28.5	28.5	12.2
-12021.16338	988	D14	D8	28.5	29	29	12
-12027.64822	988.5	D14	D8	29	29.5	29.5	11.5
-12034.12791	989	D14	D8	29.5	30	30	11.4
-12040.60245	989.5	D14	D8	30	30.5	30.5	11.3
-12047.07184	990	D14	D8	30.5	31	31	12
-12053.53608	990.5	D14	D8	31	31.5	31.5	11.7
-12059.99517	991	D14	D8	31.5	32	32	12
-12066.44911	991.5	D14	D8	32	32.5	32.5	11.8
-12072.89789	992	D14	D8	32.5	33	33	11.6
-12079.34153	992.5	D14	D8	33	33.5	33.5	11.8
-12085.78001	993	D14	D8	33.5	34	34	11.8
-12092.21334	993.5	D14	D8	34	34.5	34.5	12.1
-12098.64152	994	D14	D8	34.5	35	35	11.5
-12105.06456	994.5	D14	D8	35	35.5	35.5	10.6
-12111.48243	995	D14	D8	35.5	36	36	10.4
-12117.89516	995.5	D14	D8	36	36.5	36.5	10.7
-12124.30274	996	D14	D8	36.5	37	37	12.1
-12130.70517	996.5	D14	D8	37	37.5	37.5	11.6
-12137.10244	997	D14	D8	37.5	38	38	11.8
-12143.49456	997.5	D14	D8	38	38.5	38.5	11.9
-12149.88154	998	D14	D8	38.5	39	39	11.1
-12156.26336	998.5	D14	D8	39	39.5	39.5	11
-12162.64003	999	D14	D8	39.5	40	40	12
-12169.01155	999.5	D14	D8	40	40.5	40.5	11.7
-12175.37792	1000	D14	D8	40.5	41	41	11.8
-12181.73914	1000.5	D14	D8	41	41.5	41.5	11.8

-12188.0952	1001	D14	D8	41.5	42	42	13
-12194.44612	1001.5	D14	D8	42	42.5	42.5	13.2
-12200.79188	1002	D14	D8	42.5	43	43	13.7
-12207.1325	1002.5	D14	D8	43	43.5	43.5	13.9
-12213.46796	1003	D14	D8	43.5	44	44	13.1
-12219.79827	1003.5	D14	D8	44	44.5	44.5	12.1
-12226.12343	1004	D14	D8	44.5	45	45	12.3
-12232.44344	1004.5	D14	D8	45	45.5	45.5	12.2
-12238.7583	1005	D14	D8	45.5	46	46	12
-12245.068	1005.5	D14	D8	46	46.5	46.5	13.6
-12251.37256	1006	D14	D8	46.5	47	47	12.6
-12257.67196	1006.5	D14	D8	47	47.5	47.5	12.4
-12263.96622	1007	D14	D8	47.5	48	48	12.1
-12270.25532	1007.5	D14	D8	48	48.5	48.5	12.9
-12276.53927	1008	D14	D8	48.5	49	49	14.4
-12282.81807	1008.5	D14	D8	49	49.5	49.5	13
-12289.09172	1009	D14	D8	49.5	50	50	13.2
-12295.36022	1009.5	D14	D8	50	50.5	50.5	13
-12301.62356	1010	D14	D8	50.5	51	51	12
-12307.88176	1010.5	D14	D8	51	51.5	51.5	11.1
-12314.13481	1011	D14	D8	51.5	52	52	10.7
-12320.3827	1011.5	D14	D8	52	52.5	52.5	10.3
-12326.62544	1012	D14	D8	52.5	53	53	11
-12332.86303	1012.5	D14	D8	53	53.5	53.5	10.9
-12339.09548	1013	D14	D8	53.5	54	54	10.5
-12345.32276	1013.5	D14	D8	54	54.5	54.5	10.2
-12351.5449	1014	D14	D8	54.5	55	55	10.3
-12357.76189	1014.5	D14	D8	55	55.5	55.5	10.5
-12363.97373	1015	D14	D8	55.5	56	56	10.7
-12370.18041	1015.5	D14	D8	56	56.5	56.5	10.5
-12376.38195	1016	D14	D8	56.5	57	57	10.7
-12382.57833	1016.5	D14	D8	57	57.5	57.5	10.8
-12388.76956	1017	D14	D8	57.5	58	58	10.8
-12394.95564	1017.5	D14	D8	58	58.5	58.5	11.1
-12401.13657	1018	D14	D8	58.5	59	59	11.4
-12407.31235	1018.5	D14	D8	59	59.5	59.5	11.9
-12413.48298	1019	D14	D8	59.5	60	60	12.2
-12419.64846	1019.5	D14	D8	60	60.5	60.5	12.4
-12425.80878	1020	D14	D8	60.5	61	61	12.8
-12431.96396	1020.5	D14	D8	61	61.5	61.5	12.8
-12438.11398	1021	D14	D8	61.5	62	62	13

-12444.25885	1021.5	D14	D8	62	62.5	62.5	13.8
-12450.39858	1022	D14	D8	62.5	63	63	13
-12456.53315	1022.5	D14	D8	63	63.5	63.5	12.7
-12462.66257	1023	D14	D8	63.5	64	64	14.2
-12468.78683	1023.5	D14	D8	64	64.5	64.5	16.3
-12474.90595	1024	D14	D8	64.5	65	65	19
-12481.01992	1024.5	D14	D8	65	65.5	65.5	18.3
-12487.12873	1025	D14	D8	65.5	66	66	13.2
-12493.2324	1025.5	E14	D12	46	46.5	46.5	11.8
-12499.33091	1026	E14	D12	46.5	47	47	14.6
-12505.42427	1026.5	E14	D12	47	47.5	47.5	17.2
-12511.51248	1027	E14	D12	47.5	48	48	16.5
-12517.59554	1027.5	E14	D12	48	48.5	48.5	14.3
-12523.67345	1028	E14	D12	48.5	49	49	12.6
-12529.74621	1028.5	E14	D12	49	49.5	49.5	12.4
-12535.81381	1029	E14	D12	49.5	50	50	12.8
-12541.87627	1029.5	E14	D12	50	50.5	50.5	12.5
-12547.93357	1030	E14	D12	50.5	51	51	12.5
-12553.98573	1030.5	E14	D12	51	51.5	51.5	12.2
-12560.03273	1031	E14	D12	51.5	52	52	12.4
-12566.07458	1031.5	E14	D12	52	52.5	52.5	12.4
-12572.11128	1032	E14	D12	52.5	53	53	12
-12578.14283	1032.5	E14	D12	53	53.5	53.5	11.8
-12584.16923	1033	E14	D12	53.5	54	54	12
-12590.19047	1033.5	E14	D12	54	54.5	54.5	12.4
-12596.20657	1034	E14	D12	54.5	55	55	13
-12602.21751	1034.5	E14	D12	55	55.5	55.5	12.6
-12608.22331	1035	E14	D12	55.5	56	56	13.5
-12614.22395	1035.5	E14	D12	56	56.5	56.5	13.8
-12620.21944	1036	E14	D12	56.5	57	57	13.6
-12626.20978	1036.5	E14	D12	57	57.5	57.5	14.2
-12632.19497	1037	E14	D12	57.5	58	58	14.2
-12638.17501	1037.5	E14	D12	58	58.5	58.5	14.1
-12644.1499	1038	E14	D12	58.5	59	59	14
-12650.11963	1038.5	E14	D12	59	59.5	59.5	14
-12656.08422	1039	E14	D12	59.5	60	60	14.2
-12662.04365	1039.5	E14	D12	60	60.5	60.5	14.2
-12667.99794	1040	E14	D12	60.5	61	61	14.5
-12673.94707	1040.5	E14	D12	61	61.5	61.5	14.5
-12679.89105	1041	E14	D12	61.5	62	62	14.6
-12685.82988	1041.5	E14	D12	62	62.5	62.5	14.5

-12691.76356	1042	E14	D12	62.5	63	63	14.3
-12697.69208	1042.5	E14	D12	63	63.5	63.5	15
-12703.61546	1043	E14	D12	63.5	64	64	13.8
-12709.53369	1043.5	E14	D12	64	64.5	64.5	12.9
-12715.44676	1044	E14	D12	64.5	65	65	13
-12721.35468	1044.5	E14	D12	65	65.5	65.5	12.8
-12727.25746	1045	E14	D12	65.5	66	66	13
-12733.15508	1045.5	E14	D12	66	66.5	66.5	12.7
-12739.04755	1046	E14	D12	66.5	67	67	12.7
-12744.93487	1046.5	E14	D12	67	67.5	67.5	12.7
-12750.81703	1047	E14	D12	67.5	68	68	13.3
-12756.69405	1047.5	E14	D12	68	68.5	68.5	13.1
-12762.56592	1048	E14	D12	68.5	69	69	13.4
-12768.43263	1048.5	E14	D12	69	69.5	69.5	13.4
-12774.29419	1049	E14	D12	69.5	70	70	14
-12780.15061	1049.5	E14	D12	70	70.5	70.5	14.4
-12786.00187	1050	E14	D12	70.5	71	71	14.6
-12791.84798	1050.5	E14	D12	71	71.5	71.5	14.5
-12797.68894	1051	E14	D12	71.5	72	72	14.4
-12803.52475	1051.5	E14	D12	72	72.5	72.5	14
-12809.3554	1052	E14	D12	72.5	73	73	14.4
-12815.18091	1052.5	E14	D12	73	73.5	73.5	14.3
-12821.00127	1053	E14	D12	73.5	74	74	14.2
-12826.81647	1053.5	E14	D12	74	74.5	74.5	14.2
-12832.62652	1054	E14	D12	74.5	75	75	14.6
-12838.43142	1054.5	E14	D12	75	75.5	75.5	15.3
-12844.23118	1055	E14	D12	75.5	76	76	15.6
-12850.02578	1055.5	E14	D12	76	76.5	76.5	15.8
-12855.81522	1056	E14	D12	76.5	77	77	15.1
-12861.59952	1056.5	E14	D12	77	77.5	77.5	14.7
-12867.37867	1057	E14	D12	77.5	78	78	14.9
-12873.15266	1057.5	E14	D12	78	78.5	78.5	15.2
-12878.92151	1058	E14	D12	78.5	79	79	15.3
-12884.6852	1058.5	E14	D12	79	79.5	79.5	15.8
-12890.44374	1059	E14	D12	79.5	80	80	15.6
-12896.19713	1059.5	E14	D12	80	80.5	80.5	15.9
-12901.94537	1060	E14	D12	80.5	81	81	16
-12907.68846	1060.5	E14	D12	81	81.5	81.5	16.5
-12913.4264	1061	E14	D12	81.5	82	82	18.3
-12919.15919	1061.5	E14	D12	82	82.5	82.5	18.9
-12924.88682	1062	E14	D12	82.5	83	83	21.4

-12930.60931	1062.5	E14	D12	83	83.5	83.5	21.4
-12936.32664	1063	E14	D12	83.5	84	84	21.5
-12942.03883	1063.5	E14	D12	84	84.5	84.5	21.8
-12947.74586	1064	E14	D12	84.5	85	85	18.9
-12953.44774	1064.5	E14	D12	85	85.5	85.5	19.9
-12959.14447	1065	E14	D12	85.5	86	86	20.4
-12964.83604	1065.5	E14	D12	86	86.5	86.5	20.2
-12970.52247	1066	E14	D12	86.5	87	87	19.7
-12976.20375	1066.5	E14	D12	87	87.5	87.5	22.5
-12981.87987	1067	E14	D12	87.5	88	88	26.9
-12987.55085	1067.5	E14	D12	88	88.5	88.5	27.6
-12993.21667	1068	E14	D12	88.5	89	89	26.3
-12998.87734	1068.5	E14	D12	89	89.5	89.5	39.6
-13004.53286	1069	E14	D12	89.5	90	90	48.5
-13010.18323	1069.5	E14	D12	90	90.5	90.5	71.9
-13015.82845	1070	E14	D12	90.5	91	91	117.3
-13021.46852	1070.5	E14	D12	91	91.5	91.5	188.9
-13027.10344	1071	E14	D12	91.5	92	92	201.2
-13032.7332	1071.5	E14	D12	92	92.5	92.5	175.8
-13038.35782	1072	E14	D12	92.5	93	93	144.8
-13043.97728	1072.5	E14	D12	93	93.5	93.5	138.1
-13049.59159	1073	E14	D12	93.5	94	94	102
-13055.20075	1073.5	D14	D9	14	14.5	14.5	51.1
-13060.80476	1074	D14	D9	14.5	15	15	19.9
-13066.40362	1074.5	D14	D9	15	15.5	15.5	14.6
-13071.99733	1075	D14	D9	15.5	16	16	14.8
-13077.58589	1075.5	D14	D9	16	16.5	16.5	14.3
-13083.16929	1076	D14	D9	16.5	17	17	14.3
-13088.74755	1076.5	D14	D9	17	17.5	17.5	14.2
-13094.32065	1077	D14	D9	17.5	18	18	14.7
-13099.8886	1077.5	D14	D9	18	18.5	18.5	14.3
-13105.45141	1078	D14	D9	18.5	19	19	14.9
-13111.00906	1078.5	D14	D9	19	19.5	19.5	15.3
-13116.56156	1079	D14	D9	19.5	20	20	15.8
-13122.1089	1079.5	D14	D9	20	20.5	20.5	15.9
-13127.6511	1080	D14	D9	20.5	21	21	16.2
-13133.18815	1080.5	D14	D9	21	21.5	21.5	15.5
-13138.72004	1081	D14	D9	21.5	22	22	15.4
-13144.24679	1081.5	D14	D9	22	22.5	22.5	15.2
-13149.76838	1082	D14	D9	22.5	23	23	14.2
-13155.28482	1082.5	D14	D9	23	23.5	23.5	14.4

-13160.79611	1083	D14	D9	23.5	24	24	14.5
-13166.30225	1083.5	D14	D9	24	24.5	24.5	14.3
-13171.80324	1084	D14	D9	24.5	25	25	13.8
-13177.29908	1084.5	D14	D9	25	25.5	25.5	13.5
-13182.78976	1085	D14	D9	25.5	26	26	14.5
-13188.2753	1085.5	D14	D9	26	26.5	26.5	14.6
-13193.75568	1086	D14	D9	26.5	27	27	15.1
-13199.23092	1086.5	D14	D9	27	27.5	27.5	15.8
-13204.701	1087	D14	D9	27.5	28	28	16.5
-13210.16593	1087.5	D14	D9	28	28.5	28.5	18.1
-13215.62571	1088	D14	D9	28.5	29	29	18
-13221.08034	1088.5	D14	D9	29	29.5	29.5	19
-13226.52982	1089	D14	D9	29.5	30	30	19.6
-13231.97415	1089.5	D14	D9	30	30.5	30.5	20.3
-13237.41332	1090	D14	D9	30.5	31	31	19.8
-13242.84735	1090.5	D14	D9	31	31.5	31.5	19.1
-13248.27622	1091	D14	D9	31.5	32	32	18
-13253.69994	1091.5	D14	D9	32	32.5	32.5	16.9
-13259.11851	1092	D14	D9	32.5	33	33	15.5
-13264.53193	1092.5	D14	D9	33	33.5	33.5	14.2
-13269.9402	1093	D14	D9	33.5	34	34	14
-13275.34332	1093.5	D14	D9	34	34.5	34.5	13.4
-13280.74129	1094	D14	D9	34.5	35	35	13
-13286.13411	1094.5	D14	D9	35	35.5	35.5	13.1
-13291.52177	1095	D14	D9	35.5	36	36	13
-13296.90429	1095.5	D14	D9	36	36.5	36.5	13.2
-13302.28165	1096	D14	D9	36.5	37	37	13.1
-13307.65386	1096.5	D14	D9	37	37.5	37.5	13.2
-13313.02092	1097	D14	D9	37.5	38	38	12.7
-13318.38283	1097.5	D14	D9	38	38.5	38.5	11.8
-13323.73959	1098	D14	D9	38.5	39	39	11.8
-13329.0912	1098.5	D14	D9	39	39.5	39.5	12
-13334.43765	1099	D14	D9	39.5	40	40	11.8
-13339.77896	1099.5	D14	D9	40	40.5	40.5	11.3
-13345.11511	1100	D14	D9	40.5	41	41	11.2
-13350.44612	1100.5	D14	D9	41	41.5	41.5	11.2
-13355.77197	1101	D14	D9	41.5	42	42	11.3
-13361.09267	1101.5	D14	D9	42	42.5	42.5	11.4
-13366.40822	1102	D14	D9	42.5	43	43	11.5
-13371.71862	1102.5	D14	D9	43	43.5	43.5	11.7
-13377.02387	1103	D14	D9	43.5	44	44	11.4

-13382.32397	1103.5	D14	D9	44	44.5	44.5	11.6
-13387.61891	1104	D14	D9	44.5	45	45	12.2
-13392.90871	1104.5	D14	D9	45	45.5	45.5	12.8
-13398.19335	1105	D14	D9	45.5	46	46	13.1
-13403.47284	1105.5	D14	D9	46	46.5	46.5	13.3
-13408.74718	1106	D14	D9	46.5	47	47	13.2
-13414.01637	1106.5	D14	D9	47	47.5	47.5	13.2
-13419.28041	1107	D14	D9	47.5	48	48	14
-13424.5393	1107.5	D14	D9	48	48.5	48.5	14.3
-13429.79304	1108	D14	D9	48.5	49	49	15
-13435.04163	1108.5	D14	D9	49	49.5	49.5	15.3
-13440.28506	1109	D14	D9	49.5	50	50	14.9
-13445.52335	1109.5	D14	D9	50	50.5	50.5	15.7
-13450.75648	1110	D14	D9	50.5	51	51	17.3
-13455.98446	1110.5	D14	D9	51	51.5	51.5	17.5
-13461.20729	1111	D14	D9	51.5	52	52	18.3
-13466.42497	1111.5	D14	D9	52	52.5	52.5	19.8
-13471.6375	1112	D14	D9	52.5	53	53	22.4
-13476.84488	1112.5	D14	D9	53	53.5	53.5	25.9
-13482.0471	1113	D14	D9	53.5	54	54	47.2
-13487.24418	1113.5	D14	D9	54	54.5	54.5	73.5
-13492.4361	1114	D14	D9	54.5	55	55	91
-13497.62288	1114.5	D14	D9	55	55.5	55.5	81.6
-13502.8045	1115	D14	D9	55.5	56	56	60.6
-13507.98097	1115.5	D14	D9	56	56.5	56.5	70.3
-13513.15229	1116	D14	D9	56.5	57	57	45.8
-13518.31846	1116.5	D14	D9	57	57.5	57.5	23.6
-13523.47948	1117	D14	D9	57.5	58	58	22.6
-13528.63535	1117.5	D14	D9	58	58.5	58.5	19.8
-13533.78606	1118	D14	D9	58.5	59	59	16.4
-13538.93163	1118.5	D14	D9	59	59.5	59.5	15
-13544.07204	1119	D14	D9	59.5	60	60	13.9
-13549.2073	1119.5	D14	D9	60	60.5	60.5	13.7
-13554.33741	1120	D14	D9	60.5	61	61	12.5
-13559.46238	1120.5	D14	D9	61	61.5	61.5	11.2
-13564.58218	1121	D14	D9	61.5	62	62	11.8
-13569.69684	1121.5	D14	D9	62	62.5	62.5	11.9
-13574.80635	1122	D14	D9	62.5	63	63	11.4
-13579.91071	1122.5	D14	D9	63	63.5	63.5	11.4
-13585.00991	1123	D14	D9	63.5	64	64	11.5
-13590.10397	1123.5	D14	D9	64	64.5	64.5	10.8

-13595.19287	1124	D14	D9	64.5	65	65	10.5
-13600.27662	1124.5	D14	D9	65	65.5	65.5	10.5
-13605.35522	1125	D14	D9	65.5	66	66	10.2
-13610.42867	1125.5	D14	D9	66	66.5	66.5	9.7
-13615.49697	1126	D14	D9	66.5	67	67	9.5
-13620.56012	1126.5	D14	D9	67	67.5	67.5	9.5
-13625.61812	1127	D14	D9	67.5	68	68	9.9
-13630.67096	1127.5	D14	D9	68	68.5	68.5	10.6
-13635.71866	1128	D14	D9	68.5	69	69	11
-13640.7612	1128.5	D14	D9	69	69.5	69.5	11.1
-13645.79859	1129	D14	D9	69.5	70	70	11
-13650.83083	1129.5	D14	D9	70	70.5	70.5	10.9
-13655.85792	1130	D14	D9	70.5	71	71	10.7
-13660.87986	1130.5	D14	D9	71	71.5	71.5	10.9
-13665.89665	1131	D14	D9	71.5	72	72	11
-13670.90829	1131.5	D14	D9	72	72.5	72.5	11.5
-13675.91477	1132	D14	D9	72.5	73	73	11.6
-13680.91611	1132.5	D14	D9	73	73.5	73.5	12
-13685.91229	1133	D14	D9	73.5	74	74	12.2
-13690.90332	1133.5	D14	D9	74	74.5	74.5	12.5
-13695.88921	1134	D14	D9	74.5	75	75	13.7
-13700.86994	1134.5	D14	D9	75	75.5	75.5	13.8
-13705.84552	1135	D14	D9	75.5	76	76	13.3
-13710.81594	1135.5	D14	D9	76	76.5	76.5	13.8
-13715.78122	1136	D14	D9	76.5	77	77	14.5
-13720.74135	1136.5	D14	D9	77	77.5	77.5	14.2
-13725.69632	1137	D14	D9	77.5	78	78	14.5
-13730.64615	1137.5	D14	D9	78	78.5	78.5	15.7
-13735.59082	1138	D14	D9	78.5	79	79	16.7
-13740.53034	1138.5	D14	D9	79	79.5	79.5	18.1
-13745.46471	1139	D14	D9	79.5	80	80	18.1
-13750.39393	1139.5	D14	D9	80	80.5	80.5	18
-13755.318	1140	D14	D9	80.5	81	81	17.5
-13760.23692	1140.5	D14	D9	81	81.5	81.5	18.6
-13765.15069	1141	D14	D9	81.5	82	82	17.5
-13770.0593	1141.5	D14	D9	82	82.5	82.5	22.1
-13774.96277	1142	D14	D9	82.5	83	83	16
-13779.86108	1142.5	D14	D9	83	83.5	83.5	15.2
-13784.75424	1143	D14	D9	83.5	84	84	17.5
-13789.64225	1143.5	D14	D9	84	84.5	84.5	20.8
-13794.52511	1144	D14	D9	84.5	85	85	19.8

-13799.40282	1144.5	D14	D9	85	85.5	85.5	16.3
-13804.27538	1145	D14	D9	85.5	86	86	17.9
-13809.14279	1145.5	D14	D9	86	86.5	86.5	18.1
-13814.00504	1146	D14	D9	86.5	87	87	17.9
-13818.86215	1146.5	D14	D9	87	87.5	87.5	12.6
-13823.7141	1147	D14	D9	87.5	88	88	6.9
-13828.56091	1147.5	D14	D9	88	88.5	88.5	5.2
-13833.40256	1148	D14	D9	88.5	89	89	8.5
-13838.23906	1148.5	D14	D9	89	89.5	89.5	12.5
-13843.07041	1149	D14	D9	89.5	90	90	9.3
-13847.89661	1149.5	D14	D9	90	90.5	90.5	8.4
-13852.71765	1150	D14	D9	90.5	91	91	12.8
-13857.53355	1150.5	D14	D9	91	91.5	91.5	21.3
-13862.3443	1151	D14	D9	91.5	92	92	29.4
-13867.14989	1151.5	D14	D9	92	92.5	92.5	20.6
-13871.95033	1152	D14	D9	92.5	93	93	6.4
-13876.74563	1152.5	D14	D9	93	93.5	93.5	10.2
-13881.53577	1153	D14	D9	93.5	94	94	7.1
-13886.32076	1153.5	D14	D9	94	94.5	94.5	8
-13891.10059	1154	D14	D9	94.5	95	95	13.4
-13895.87528	1154.5	D14	D9	95	95.5	95.5	23.5
-13900.64482	1155	D14	D9	95.5	96	96	23.1
-13905.4092	1155.5	D14	D9	96	96.5	96.5	21.8
-13910.16844	1156	D14	D9	96.5	97	97	14.2
-13914.92252	1156.5	D14	D9	97	97.5	97.5	19.3
-13919.67146	1157	D14	D9	97.5	98	98	23.9
-13924.41524	1157.5	D14	D9	98	98.5	98.5	35.3
-13929.15387	1158	D14	D9	98.5	99	99	50.6
-13933.88735	1158.5	E14	D13	48	48.5	48.5	10.7
-13938.61567	1159	E14	D13	48.5	49	49	10.8
-13943.33885	1159.5	E14	D13	49	49.5	49.5	10.8
-13948.05688	1160	E14	D13	49.5	50	50	8.6
-13952.76975	1160.5	E14	D13	50	50.5	50.5	4.4
-13957.47748	1161	E14	D13	50.5	51	51	3.6
-13962.18005	1161.5	E14	D13	51	51.5	51.5	4.1
-13966.87747	1162	E14	D13	51.5	52	52	1.3
-13971.56974	1162.5	E14	D13	52	52.5	52.5	0.7
-13976.25686	1163	E14	D13	52.5	53	53	2.1
-13980.93883	1163.5	E14	D13	53	53.5	53.5	6.2
-13985.61565	1164	E14	D13	53.5	54	54	4.3
-13990.28731	1164.5	E14	D13	54	54.5	54.5	1.3

-13994.95383	1165	E14	D13	54.5	55	55	1.3
-13999.61519	1165.5	E14	D13	55	55.5	55.5	2.7
-14004.27141	1166	E14	D13	55.5	56	56	5.3
-14008.92247	1166.5	E14	D13	56	56.5	56.5	5
-14013.56838	1167	E14	D13	56.5	57	57	6.8
-14018.20914	1167.5	E14	D13	57	57.5	57.5	12.2
-14022.84475	1168	E14	D13	57.5	58	58	23.2
-14027.47521	1168.5	E14	D13	58	58.5	58.5	36
-14032.10051	1169	E14	D13	58.5	59	59	54.8
-14036.72067	1169.5	E14	D13	59	59.5	59.5	55.4
-14041.33567	1170	E14	D13	59.5	60	60	69.6
-14045.94553	1170.5	E14	D13	60	60.5	60.5	65.1
-14050.55023	1171	E14	D13	60.5	61	61	57.1
-14055.14978	1171.5	E14	D13	61	61.5	61.5	41.5
-14059.74418	1172	E14	D13	61.5	62	62	28
-14064.33343	1172.5	E14	D13	62	62.5	62.5	26.5
-14068.91753	1173	E14	D13	62.5	63	63	37.2
-14073.49647	1173.5	E14	D13	63	63.5	63.5	45
-14078.07027	1174	E14	D13	63.5	64	64	60.1
-14082.63892	1174.5	E14	D13	64	64.5	64.5	54.4
-14087.20241	1175	E14	D13	64.5	65	65	60.7
-14091.76075	1175.5	E14	D13	65	65.5	65.5	62.2
-14096.31394	1176	E14	D13	65.5	66	66	39.9
-14100.86198	1176.5	E14	D13	66	66.5	66.5	23.9
-14105.40487	1177	E14	D13	66.5	67	67	24.2
-14109.94261	1177.5	E14	D13	67	67.5	67.5	22.8
-14114.4752	1178	E14	D13	67.5	68	68	7.7
-14119.00264	1178.5	E14	D13	68	68.5	68.5	8.6
-14123.52492	1179	E14	D13	68.5	69	69	14.9
-14128.04206	1179.5	E14	D13	69	69.5	69.5	20.8
-14132.55404	1180	E14	D13	69.5	70	70	36.4
-14137.06087	1180.5	E14	D13	70	70.5	70.5	31.3
-14141.56255	1181	E14	D13	70.5	71	71	46.2
-14146.05908	1181.5	E14	D13	71	71.5	71.5	54.6
-14150.55046	1182	E14	D13	71.5	72	72	61.3
-14155.03669	1182.5	E14	D13	72	72.5	72.5	38.9
-14159.51777	1183	E14	D13	72.5	73	73	31.5
-14163.99369	1183.5	E14	D13	73	73.5	73.5	37.6
-14168.46447	1184	E14	D13	73.5	74	74	39.5
-14172.93009	1184.5	E14	D13	74	74.5	74.5	20.8
-14177.39056	1185	E14	D13	74.5	75	75	25.5

-14181.84588	1185.5	E14	D13	75	75.5	75.5	45.4
-14186.29605	1186	E14	D13	75.5	76	76	49.1
-14190.74107	1186.5	E14	D13	76	76.5	76.5	70.6
-14195.18094	1187	E14	D13	76.5	77	77	86.7
-14199.61566	1187.5	E14	D13	77	77.5	77.5	22.8
-14204.04522	1188	E14	D13	77.5	78	78	25.8
-14208.46964	1188.5	E14	D13	78	78.5	78.5	23.9
-14212.8889	1189	E14	D13	78.5	79	79	10.3
-14217.30302	1189.5	E14	D13	79	79.5	79.5	20.5
-14221.71198	1190	E14	D13	79.5	80	80	7.1
-14226.11579	1190.5	E14	D13	80	80.5	80.5	5.7
-14230.51445	1191	E14	D13	80.5	81	81	19.2
-14234.90796	1191.5	E14	D13	81	81.5	81.5	39.9
-14239.29631	1192	E14	D13	81.5	82	82	80.7
-14243.67952	1192.5	E14	D13	82	82.5	82.5	83.5
-14248.05758	1193	E14	D13	82.5	83	83	81.9
-14252.43048	1193.5	E14	D13	83	83.5	83.5	82.5
-14256.79823	1194	E14	D13	83.5	84	84	75.8
-14261.16084	1194.5	E14	D13	84	84.5	84.5	78.6
-14265.51829	1195	E14	D13	84.5	85	85	81.7
-14269.87059	1195.5	E14	D13	85	85.5	85.5	73.9
-14274.21774	1196	E14	D13	85.5	86	86	27.1
-14278.55973	1196.5	E14	D13	86	86.5	86.5	15
-14282.89658	1197	E14	D13	86.5	87	87	36.3
-14287.22828	1197.5	E14	D13	87	87.5	87.5	46.7
-14291.55482	1198	E14	D13	87.5	88	88	32.6
-14295.87621	1198.5	E14	D13	88	88.5	88.5	12.5
-14300.19246	1199	E14	D13	88.5	89	89	46.2
-14304.50355	1199.5	E14	D13	89	89.5	89.5	56.2
-14308.80949	1200	E14	D13	89.5	90	90	84.8

Appendix D: Composite Carbonate Oxygne Isotopes

AGE BCE/CE	Analysis	Identifier	d13C-VPDB	d18O-VPDB
2014	68322	I14 0-0.5	0.812072072	-6.928597897
2009.519674	68323	I14 0.5-1.0	0.771392554	-7.117277243
2005.027931	68324	I14 1.0-1.5	0.703342247	-5.419790862
2000.524872	68325	I14 1.5-2.0	0.569124946	-6.205892611
1996.010599	68326	I14 2.0-2.5	0.659774985	-8.360190281
1991.485213	68327	I14 2.5-3.0	0.573896001	-5.701771982
1986.948815	68328	I14 3.0-3.5	0.205645913	-6.325079252
1982.401504	68329	I14 3.5-4.0	0.424109995	-5.504766195
1977.843381	68330	I14 4.0-4.5	0.711628816	-5.01198674
1973.274546	68331	I14 4.5-5.0	0.486008152	-5.840453946
1968.695099	68332	I14 5.0-5.5	0.577662623	-5.120984569
1964.105137	68333	I14 5.5-6.0	0.317891252	-4.704462938
1959.504761	68338	I14 6.0-6.5	0.34438316	-5.793430161
1954.894069	68339	I14 6.5-7.0	0.834922913	-4.725036097
1950.273158	68340	I14 7.0-7.5	0.628888684	-4.46797527
1945.642127	68341	I14 7.5-8.0	0.861917038	-4.710132325
1941.001073	68342	I14 8.0-8.5	0.878113513	-4.903534379
1936.350093	68343	I14 8.5-9.0	1.136127128	-4.919557123
1931.689284	68344	I14 9.0-9.5	1.224140531	-5.182549649
1927.018744	68345	I14 9.5-10.0	1.340152492	-5.294276657
1922.338567	68346	I14 10.0-10.5	1.604318256	-4.683012825

1917.64885	68347	I14 10.5-11	1.726482366	-4.521517357
1912.949689	68348	I14 11-11.5	1.832575556	-4.761868672
1908.241178	68349	I14 11.5-12	1.74418549	-5.91564703
1903.523414	68350	I14 12-12.5	1.316673881	-5.444119756
1898.796489	68351	I14 12.5-13	1.671364129	-5.315683235
1894.0605	68352	I14 13-13.5	1.960012937	-4.652747435
1889.31554	68353	I14 13.5-14	1.949466395	-5.504272562
1884.561702	68354	I14 14-14.5	1.737154462	-4.553668361
1879.79908	68355	I14 14.5-15	1.734141165	-4.758182666
1875.027767	68356	I14 15-15.5	1.967671735	-4.229149492
1870.247856	67416	Pretty d18O I-14 Surface 15.5 - 16 cm		-3.590192831
1865.45944	67417	Pretty d18O I-14 Surface 16 - 16.5 cm	2.21276333	-3.873894099
1860.662609	67418	Pretty d18O I-14 Surface 16.5 - 17 cm	2.293441461	-3.940589355
1855.857458	67419	Pretty d18O I-14 Surface 17 - 17.5 cm	2.256148026	-3.794582621
1851.044076	67420	Pretty d18O I-14 Surface 17.5 - 18 cm	2.488859062	-3.786721109
1846.222555	67421	Pretty d18O I-14 Surface 18 - 18.5 cm	2.172735042	-4.098745618
1841.392986	67422	Pretty d18O I-14 Surface 18.5 - 19 cm	2.404451587	-3.744757436
1836.555459	67423	Pretty d18O I-14 Surface 19 - 19.5 cm	2.456911019	-3.981808658
1831.710066	67424	Pretty d18O I-14 Surface 19.5 - 20 cm	2.434162024	-3.704320995
1826.856895	67028	I14 20-20.5	2.347185682	-

				3.379608776
1821.996036	67426	Pretty d18O I-14 Surface 20.5 - 21 cm	2.671596895	-3.612791649
1817.12758	67427	Pretty d18O I-14 Surface 21 - 21.5 cm	2.160055274	-3.759319571
1812.251614	67428	Pretty d18O I-14 Surface 21.5 - 22 cm	2.336080289	-3.629557049
1807.368228	67429	Pretty d18O I-14 Surface 22 - 22.5 cm	2.559467966	-3.535753937
1802.47751	67430	Pretty d18O I-14 Surface 22.5 - 23 cm	2.502657633	-3.542609404
1797.579549	67431	Pretty d18O I-14 Surface 23 - 23.5 cm	2.179820795	-3.644153354
1792.674431	67432	Pretty d18O I-14 Surface 23.5 - 24 cm	2.212017461	-3.430115305
1787.762245	67433	Pretty d18O I-14 Surface 24 - 24.5 cm	2.075399176	-3.320206821
1782.843077	67434	Pretty d18O I-14 Surface 24.5 - 25 cm	2.208661052	-3.234872913
1777.917015	67029	I14 25-25.5	2.421654112	-3.485796982
1772.984146	67435	Pretty d18O I-14 Surface 25.5 - 26 cm	2.052898804	-3.405281215
1768.044554	67436	Pretty d18O I-14 Surface 26 - 26.5 cm	2.104612367	-3.132930611
1763.098328	67437	Pretty d18O I-14 Surface 26.5 - 27 cm	2.217735788	-3.096745857
1758.145551	67438	Pretty d18O I-14 Surface 27 - 27.5 cm	2.058990065	-3.182462114
1753.18631	67443	Pretty d18O I-14 Surface 27.5 - 28 cm	1.819814833	-3.123578197
1748.220689	67444	Pretty d18O I-14 Surface	1.705572609	-3.243032432

		28 - 28.5 cm		
1743.248774	67445	Pretty d18O I-14 Surface 28.5 - 29 cm	1.938407957	-2.990119346
1738.270649	67446	Pretty d18O I-14 Surface 29 - 29.5 cm	2.047180477	-2.939495293
1733.286398	67447	Pretty d18O I-14 Surface 29.5 - 30 cm	1.922993337	-3.011327608
1728.296104	67030	I14 30-30.5	2.385269425	-3.501218416
1723.299852	67448	Pretty d18O I-14 Surface 30.5 - 31 cm	1.783267266	-3.117453259
1718.297725	67449	Pretty d18O I-14 Surface 31 - 31.5 cm	1.927095615	-3.017402373
1713.289806	67450	Pretty d18O I-14Surface 31.5 - 32 cm	1.819317587	-3.123666863
1708.276176	67451	Pretty d18O I-14 Surface 32 - 32.5 cm	1.601275302	-3.541487009
1703.256919	67452	Pretty d18O I-14 Surface 32.5 - 33 cm	1.757659107	-3.324255654
1698.232117	67453	Pretty d18O I-14 Surface 33 - 33.5 cm	1.757161862	-3.308295176
1693.201852	67454	Pretty d18O I-14 Surface 33.5 - 34 cm	1.683072237	-3.420576041
1688.166204	67455	Pretty d18O I-14 Surface 34 - 34.5 cm	1.587103797	-3.356345725
1683.125256	67456	Pretty d18O I-14 Surface 34.5 - 35 cm	1.714523034	-3.507455348
1678.079087	67031	I14 35-35.5	1.909077588	-3.940075405
1673.027779	67457	Pretty d18O I-14 Surface 35.5 - 36 cm	1.45719833	-3.335207965
1667.971412	67458	Pretty d18O I-14 Surface 36 - 36.5 cm	1.196144283	-3.608436773

1662.910065	67459	Pretty d18O I-14 Surface 36.5 - 37 cm	1.352901023	-3.399595286
1657.843819	67460	Pretty d18O I-14 Surface 37 - 37.5 cm	1.235178079	-3.272331874
1652.772753	67461	Pretty d18O I-14 Surface 37.5 - 38 cm	1.251711502	-3.635449289
1647.696946	67462	Pretty d18O I-14 Surface 38 - 38.5 cm	1.153505456	-3.678958362
1642.616476	67463	Pretty d18O I-14 Surface 38.5 - 39 cm	1.160591208	-3.5254543
1637.531422	67464	Pretty d18O I-14 Surface 39 - 39.5 cm	1.100921712	-3.571601322
1632.441863	67465	Pretty d18O I-14 Surface 39.5 - 40 cm	1.284778348	-3.691194396
1627.347876	67032	I14 40-40.5	1.617668572	-4.671498247
1622.249539	67467	Pretty d18O I-14 Surface 40.5 - 41 cm	1.289004937	-4.325656371
1617.14693	67471	Pretty d18O I-14 Surface 41 - 41.5 cm	1.111363874	-4.266997798
1612.040124	67472	Pretty d18O I-14 Surface 41.5 - 42 cm	0.982825833	-4.445875304
1606.9292	67473	Pretty d18O I-14 Surface 42 - 42.5 cm	1.296463624	-4.423019135
1601.814233	67474	Pretty d18O I-14 Surface 42.5 - 43 cm	0.97996667	-4.409465207
1596.695299	67475	Pretty d18O I-14 Surface 43 - 43.5 cm	1.235053767	-4.850749215
1591.572475	68102	Pretty d18O I-14 Surface 43.5 - 44 cm	0.339663268	-7.79239053
1586.445836	67477	Pretty d18O I-14 Surface 44 - 44.5 cm	1.097245645	-8.780020112

1581.315457	67478	Pretty d18O I-14 Surface 44.5 - 45 cm	1.412570519	-8.034642263
1576.181413	67033	I14 45-45.5	1.721103854	-9.123006033
1571.043779	67479	Pretty d18O I-14 Surface 44.5 - 45 cm	1.329157536	-7.903881374
1565.90263	67480	Pretty d18O I-14 Surface 45.5 - 46 cm	0.318008193	-9.649013528
1560.758039	67481	Pretty d18O I-14 Surface 46 - 46.5 cm	0.32372652	-8.592651129
1555.61008	67482	Pretty d18O I-14 Surface 46.5 - 47 cm	0.969275885	-8.285438879
1550.458827	67483	Pretty d18O I-14 Surface 47 - 47.5 cm	1.377639002	-7.703234646
1545.304354	67484	Pretty d18O I-14 Surface 47.5 - 48 cm	1.222746934	-8.463838436
1540.146732	67485	Pretty d18O I-14 Surface 48 - 48.5 cm	1.194776857	-8.787483694
1534.986035	67486	Pretty d18O I-14 Surface 48.5 - 49 cm	1.203975905	-9.179712349
1529.822335	68882	Pretty d18O I-14 Surface 49 - 49.5 cm	-1.333286724	-14.12480378
1524.655704	68104	Pretty d18O I-14Surface 49.5 - 50 cm	0.232533618	-9.731876384
1519.486215	67034	I14 50-50.5	0.462599815	-11.01741378
1514.313938	68105	Pretty d18O I-14 Surface 50.5 - 51 cm	-0.566114785	-11.02145389
1509.138944	69307	Pretty d18O I-14 Surface 51 - 51.5 cm	-5.017850824	-14.25635638
1503.961306	69308	Pretty d18O I-14 Surface 51.5 - 52 cm	-5.979041405	-15.76270932
1498.781093				

1493.598376				
1488.413225	69093	Pretty d18O I-14 Surface 53 - 53.5 cm	-2.016412093	-17.06993276
1483.225709				
1478.035899				
1472.843864	67709	Pretty d18O I-14Surface 54.5 - 55 cm	0.425615803	-7.302590659
1467.649672	67035	I14 55-55.5	-0.029588024	-8.407891357
1462.453392	67710	Pretty d18O I-14Surface 55.5 - 56 cm	1.217845317	-4.740944577
1457.255093	67711	Pretty d18O I-14Surface 56 - 56.5 cm	1.117566227	-5.032170317
1452.054843	67712	Pretty d18O I-14Surface 56.5 - 57 cm	1.28255744	-5.275136585
1446.85271	67713	Pretty d18O I-14Surface 57 - 57.5 cm	1.35665529	-5.07472766
1441.648761	67714	Pretty d18O I-14Surface 57.5 - 58 cm	0.902064979	-5.617959626
1436.443063	67715	Pretty d18O I-14Surface 58 - 58.5 cm	1.072243042	-4.798939388
1431.235684	67716	Pretty d18O I-14Surface 58.5 - 59 cm	1.401854979	-4.528436015
1426.02669	67717	Pretty d18O I-14Surface 59 - 59.5 cm	1.665890318	-3.971435496
1420.816149	67718	Pretty d18O I-14Surface 59.5 - 60 cm	1.574502969	-4.477116866
1415.604125	67036	I14 60-60.5	0.414238848	-8.220414229
1410.390685	67720	Pretty d18O I-14Surface 60.5 - 61 cm	1.188082681	-5.375410586
1405.175894	67721	Pretty d18O I-14Surface 61 - 61.5 cm	1.146958374	-7.423368478
1399.959819	67722	Pretty d18O	1.484721074	-

		I-14Surface 61.5 - 62 cm		5.311991801
1394.742523	67723	Pretty d18O I-14Surface 62 - 62.5 cm	1.525721885	-4.951227919
1389.524072	67724	Pretty d18O I-14Surface 62.5 - 63 cm	1.2529183	-5.7342274
1384.30453	67725	Pretty d18O I-14Surface 63 - 63.5 cm	1.456069906	-5.160259574
1379.083962	67726	Pretty d18O I-14Surface 63.5 - 64 cm	0.783384923	-5.449862757
1373.862432	67727	Pretty d18O I-14Surface 64 - 64.5 cm	0.56529025	-6.135462481
1368.640002	67728	Pretty d18O I-14Surface 64.5 - 65 cm	0.850566973	-6.418343643
1363.416737	67037	I14 65-65.5	0.581077969	-8.727564749
1358.1927	67730	Pretty d18O I-14Surface 65.5 - 66 cm	0.401322293	-7.688805501
1352.967953	69259	Pretty d18O I-14Surface 66 - 66.5 cm	0.504237476	-7.627482487
1347.74256				
1342.516582				
1337.290082				
1332.063121				
1326.835761				
1321.608064				
1316.380089				
1311.151898				
1305.923552	68293	Pretty d18O I-14Surface 70.5 - 71 cm	-1.680929548	-12.3088435
1300.69511	68294	Pretty d18O I-14Surface 71 - 71.5 cm	-2.088173143	-13.80279565
1295.466632	67744	Pretty d18O I-14Surface 71.5 - 72 cm	-4.209257652	-11.44354729
1290.238179	67745	Pretty d18O	-	-

		I-14Surface 72 - 72.5 cm	0.544942538	7.004411105
1285.009808	67746	Pretty d18O I-14Surface 72.5 - 73 cm	0.604438614	-6.000280332
1279.78158				
1274.553554				
1269.325787	67749	Pretty d18O I-14Surface 74 - 74.5 cm	-7.900052127	-14.8499361
1264.098338	67750	Pretty d18O I-14Surface 74.5 - 75 cm	-0.780326709	-10.22889476
1258.871265				
1253.644626				
1248.418479				
1243.19288				
1237.967887				
1232.743556				
1227.519943				
1222.297106				
1217.075099				
1211.853978				
1206.6338	69279	I14 80-80.5	-2.839185682	-16.40008572
1201.414618	67764	Pretty d18O I-14Surface 80.5 - 81 cm	-0.278807759	-8.773878672
1196.196488				
1190.979464	67766	Pretty d18O I-14Surface 81.5 - 82 cm	-2.126849308	-9.705014263
1185.763601	67767	Pretty d18O I-14Surface 82 - 82.5 cm	-0.799962639	-7.557795641
1180.548953	67768	Pretty d18O I-14Surface 82.5 - 83 cm	-1.82461241	-10.63332859
1175.335574	67769	Pretty d18O I-14Surface 83 - 83.5 cm	-0.121720317	-8.055410586
1170.123516	67770	Pretty d18O I-14Surface 83.5 - 84 cm	-0.072074758	-7.564054074
1164.912834	68310	Pretty d18O	0.088755073	-

		I-14Surface 84 - 84.5 cm		13.88094683
1159.703581				
1154.495808				
1149.28957				
1144.084917				
1138.881903	67776	Pretty d18O I-14Surface 86.5 - 87 cm	-0.656089313	-8.784170317
1133.680578	67777	Pretty d18O I-14Surface 87 - 87.5 cm	0.917872521	-5.509897353
1128.480995	67778	Pretty d18O I-14Surface 87.5 - 88 cm	1.207595115	-4.452857988
1123.283204	67779	Pretty d18O I-14Surface 88 - 88.5 cm	-0.28535307	-6.76506082
1118.087257	67780	Pretty d18O I-14Surface 88.5 - 89 cm	0.438335934	-5.975107525
1112.893204	67781	Pretty d18O I-14Surface 89 - 89.5 cm	-0.376740418	-7.316359211
1107.701095	67782	Pretty d18O I-14Surface 89.5 - 90 cm	0.202581274	-7.591869331
1102.510982	67042	I14 90-90.5	0.584310321	-9.822920547
1097.322913	67783	Pretty d18O I-14Surface 90.5 - 91 cm	0.086000656	-5.616151635
1092.136939	67784	Pretty d18O I-14urface 91 - 91.5 cm	0.07896136	-6.362017748
1086.953109	67785	Pretty d18O I-14Surface 91.5 - 92 cm	0.400669526	-7.030775995
1081.771473	67835	Pretty d18O I-14surface Depth 92 - 92.5 cm	0.879010927	-7.196009295
1076.592078	67836	Pretty d18O I-14surface Depth 92.5 - 93 cm	1.199001752	-5.934363585

1071.414974	67837	Pretty d18O I-14surface Depth 93 - 93.5 cm	1.237665776	-6.082924288
1066.24021	67838	Pretty d18O I-14surface Depth 93.5 - 94 cm	1.245275837	-6.776070392
1061.067833	67839	Pretty d18O I-14surface Depth 94 - 94.5 cm	1.001631117	-6.508990348
1055.897892	67840	Pretty d18O I-14surface Depth 94.5 - 95 cm	1.245644066	-6.131621471
1050.730434	67043	I14 95-95.5	-0.340018191	-9.982009872
1045.565506				
1040.403156	67843	Pretty d18O I-14surface Depth 96 - 96.5 cm	-0.343631422	-7.92779307
1035.243431	67844	Pretty d18O I-14surface Depth 96.5 - 97 cm	0.723495632	-6.36029247
1030.086378	68315	Pretty d18O I-14Surface 97 - 97.5 cm	-1.404961701	-11.42552265
1024.932042	67846	Pretty d18O I-14surface Depth 97.5 - 98 cm	-0.300478514	-7.866201422
1019.78047	67847	Pretty d18O I-14surface Depth 98 - 98.5 cm	-0.784892264	-8.225188826
1014.631709	67848	Pretty d18O I-14surface Depth 98.5 - 99 cm	-1.360065646	-8.954082778
1009.485803	67849	Pretty d18O I-14surface Depth 99 - 99.5 cm	0.270205982	-8.074844846
1004.342798	67850	Pretty d18O	0.928476329	-

		I-14surface Depth 99.5 - 100 cm		7.089241292
999.2027397	67044	I14 100-100.5	0.345862159	-9.225997203
994.0656727	67851	Pretty d18O I-14surface Depth 100.5 - 101 cm	0.002135418	-7.752346035
988.9316417	68316	Pretty d18O I-14Surface 101-101.5 cm	-1.285308672	-11.26513841
983.8006913	67856	Pretty d18O I-14surface Depth 101.5 - 102 cm	-0.180506065	-7.457419432
978.6728656	67857	Pretty d18O I-14surface Depth 102 - 102.5 cm	-0.757152362	-7.256183467
973.5482086	67858	Pretty d18O I-14surface Depth 102.5 - 103 cm	-0.463305782	-7.095139824
968.4267641	67859	Pretty d18O I-14surface Depth 103 - 103.5 cm	-2.464752037	-11.50532135
963.3085756	67860	Pretty d18O I-14surface Depth 103.5 - 104 cm	0.622846427	-6.784026552
958.1936862	67861	Pretty d18O I-14surface Depth 104 - 104.5 cm	-1.291329603	-12.4688397
953.0821391	67862	Pretty d18O I-14surface Depth 104.5 - 105 cm	-0.553890066	-8.309414377
947.9739769	67045	I14 105-105.5	0.586050819	-8.592019487
942.8692422	67863	Pretty d18O I-14surface Depth 105.5 - 106 cm	0.594738296	-5.493286643
937.7679773	67864	Pretty d18O	0.306906119	-

		I-14surface Depth 106 - 106.5 cm		6.640678505
932.6702242	67865	Pretty d18O I-14surface Depth 106.5 - 107 cm	0.487829202	-5.693483997
927.5760246	67866	Pretty d18O I-14surface Depth 107 - 107.5 cm	0.329245333	-5.331204388
922.4854202	67868	Pretty d18O I-14surface Depth 107.5 - 108 cm	0.774433949	-5.792524465
917.3984523	67869	Pretty d18O I-14surface Depth 108 - 108.5 cm	0.753690393	-5.156168879
912.3151619	67870	Pretty d18O I-14surface Depth 108.5 - 109 cm	0.31905767	-4.935042514
907.2355898	67871	Pretty d18O I-14surface Depth 109 - 109.5 cm	-0.29122019	-5.679629305
902.1597768	67872	Pretty d18O I-14surface Depth 109.5 - 110 cm	-0.493009571	-5.997875686
897.087763	67049	I14 110-110.5	-0.034560874	-8.152056265
892.0195886	67873	Pretty d18O I-14surface Depth 110.5 - 111 cm	0.101311707	-4.683463263
886.9552936	67874	Pretty d18O I-14surface Depth 111 - 111.5 cm	-0.672336995	-5.396225416
881.8949175	67875	Pretty d18O I-14surface Depth 111.5 - 112 cm	-0.117538941	-4.899925672
876.8384997	67876	Pretty d18O I-14surface	-0.085994007	-4.331471792

		Depth 112 - 112.5 cm		
871.7860795	67877	Pretty d18O I-14urface Depth 112.5 - 113 cm	0.19140502	-3.900741777
866.7376957	67878	Pretty d18O I-14surface Depth 113 - 113.5 cm	-0.1668816	-3.892236917
861.693387	67879	Pretty d18O I-14urface Depth 113.5 - 114 cm	-0.25059228	-4.520087643
856.653192	67884	Pretty d18O I-14surface Depth 114 - 114.5 cm	0.00471302	-3.39346802
851.6171487	67885	Pretty d18O I-14surface Depth 114.5 - 115 cm	0.291808739	-3.287020093
846.5852953	67833	Pretty d18O I-14Surface 115 - 115.5 cm	0.772925964	-3.963509213
841.5576694	67886	Pretty d18O I-14surface Depth 115.5 - 116 cm	0.365577241	-3.246964945
836.5343085	67887	Pretty d18O I-14surface Depth 116 - 116.5 cm	0.792599903	-3.058211919
831.5152501	67888	Pretty d18O I-14surface Depth 116.5 - 117 cm	0.677958004	-3.274399977
826.500531	67889	Pretty d18O I-14surface Depth 117 - 117.5 cm	0.511764073	-3.181806742
821.4901882	67890	Pretty d18O I-14surface Depth 117.5 - 118 cm	0.724968547	-3.220215788
816.4842582	67891	Pretty d18O	1.131002167	-

		I-14surface Depth 118 - 118.5 cm		3.276535991
811.4827774	67892	Pretty d18O I-14surface Depth 118.5 - 119 cm	0.863177089	-3.47687052
806.4857818	67893	Pretty d18O I-14surface Depth 119 - 119.5 cm	0.643589983	-3.799232155
801.4933074	67894	Pretty d18O I-14surface Depth 119.5 - 120 cm	0.378219763	-3.969740884
796.5053899	67051	I14 120-120.5	0.825742193	-3.665941255
791.5220646	67895	Pretty d18O I-14surface Depth 120.5 - 121 cm	0.832614099	-3.515691091
786.5433668	67896	Pretty d18O I-14urface Depth 121 - 121.5 cm	1.119587075	-3.398543501
781.5693314	67897	Pretty d18O I-14surface Depth 121.5 - 122 cm	1.10473518	-3.415690397
776.5999932	67898	Pretty d18O I-14surface Depth 122 - 122.5 cm	1.011205065	-3.726313757
771.6353867	67899	Pretty d18O I-14surface Depth 122.5 - 123 cm	1.207348271	-3.561507596
766.6755461	67900	Pretty d18O I-14surface Depth 123 - 123.5 cm	0.703365791	-3.870974766
761.7205056	67901	Pretty d18O I-14surface Depth 123.5 - 124 cm	1.108294725	-3.722414064
756.7702988	67902	Pretty d18O I-14surface	0.942837252	-3.532700812

		Depth 124 - 124.5 cm		
751.8249596	67903	Pretty d18O I-14surface Depth 124.5 - 125 cm	0.959284805	-3.479888373
746.8845211	67052	I14 125-125.5	0.758111432	-3.913845506
741.9490165	67905	Pretty d18O I-14surface Depth 125.5 - 126 cm	0.717481228	-3.867133862
737.0184788	67906	Pretty d18O I-14surface Depth 126 - 126.5 cm	1.045204858	-3.753690001
732.0929407	67907	Pretty d18O I-14surface Depth 126.5 - 127 cm	1.094793002	-3.780301983
727.1724346	67908	Pretty d18O I-14surface Depth 127 - 127.5 cm	1.018324155	-3.780576333
722.2569928	68031	Pretty d18O I-14D-surface Depth 127.5 - 128 cm	1.167506067	-3.534008976
717.3466472	68032	Pretty d18O I-14D-surface Depth 128 - 128.5 cm	0.966653637	-3.629761366
712.4414297	68033	Pretty d18O I-14D-surface Depth 128.5 - 129 cm	1.00411769	-3.494532114
707.5413718	68034	Pretty d18O I-14D-surface Depth 129 - 129.5 cm	1.265363677	-3.556687174
702.6465049	68035	Pretty d18O I-14D-surface Depth 129.5 - 130 cm	1.189558486	-3.588744626
697.7568601	67053	I14 130-130.5	0.505242005	-4.08411277
692.8724683	68036	Pretty d18O	1.313853939	-

		I-14D-surface Depth 130.5 - 131 cm		3.381281115
687.9933601	68037	Pretty d18O I-14D-surface Depth 131 - 131.5 cm	1.46897266	-3.354123273
683.1195661	68038	Pretty d18O I-14D-surface Depth 131.5 - 132 cm	1.181038233	-3.572225939
678.2511164	68039	Pretty d18O I-14D-surface Depth 132 - 132.5 cm	1.069899053	-3.695416148
673.388041	68040	Pretty d18O I-14D-surface Depth 132.5 - 133 cm	0.910520207	-3.846044176
668.5303698	68041	Pretty d18O I-14D-surface Depth 133 - 133.5 cm	1.009254901	-3.764150685
663.6781324	68042	Pretty d18O I-14D-surface Depth 133.5 - 134 cm	1.132673269	-3.935497067
658.8313579				
653.9900757	68044	Pretty d18O I-14D-surface Depth 134.5 - 135 cm	1.375625772	-4.251871922
649.1543146	67054	I14 135-135.5	1.472088385	-7.473474408
644.3241033	68045	Pretty d18O I-14D-surface Depth 135.5 - 136 cm	1.530368599	-4.327325925
639.4994702	68047	Pretty d18O I-14D-surface Depth 136 - 136.5 cm	0.316626366	-5.535569897
634.6804436	68048	Pretty d18O I-14D-surface Depth 136.5 - 137 cm	1.034063872	-3.838764755
629.8670516	68049	Pretty d18O	1.338412315	-

		I-14D-surface Depth 137 - 137.5 cm		4.056167476
625.059322	68050	Pretty d18O I-14D-surface Depth 137.5 - 138 cm	1.366228434	-4.162279043
620.2572823	68051	Pretty d18O I-14D-surface Depth 138 - 138.5 cm	2.136058336	-3.789908638
615.46096	68052	Pretty d18O I-14D-surface Depth 138.5 - 139 cm	0.292801877	-5.424138753
610.6703822	68053	Pretty d18O I-14D-surface Depth 139 - 139.5 cm	-0.079332694	-5.215835309
605.8855758	68881	Pretty d18O I-14D-surface Depth 139.5 - 140 cm	0.118904863	-8.362394162
601.1065677	67055	I14 140-140.5	-4.105335966	-10.81956578
596.3333844	68058	Pretty d18O I-14D-surface Depth 140.5 - 141 cm	1.218752882	-4.573706343
591.566052	68059	Pretty d18O I-14D-surface Depth 141 - 141.5 cm	1.276139291	-4.890921132
586.8045968	68060	Pretty d18O I-14D-surface Depth 141.5 - 142 cm	-0.602200562	-8.61098547
582.0490446	68061	Pretty d18O I-14D-surface Depth 142 - 142.5 cm	-0.548823684	-8.146782364
577.2994211	68062	Pretty d18O I-14D-surface Depth 142.5 - 143 cm	-0.258007408	-6.88534262
572.5557518	68063	Pretty d18O I-14D-surface	-0.007912928	-6.034770222

		Depth 143 - 143.5 cm		
567.8180618	68064	Pretty d18O I-14D-surface Depth 143.5 - 144 cm	-0.261515747	-6.803449129
563.0863762	68065	Pretty d18O I-14D-surface Depth 144 - 144.5 cm	0.028548742	-6.143401588
558.3607198	68067	Pretty d18O I-14D-surface Depth 144.5 - 145 cm	0.539763911	-6.560568432
553.6411173	67056	I14 145-145.5	0.390244846	-8.910146641
548.927593	69094	Pretty d18O I-14D-surface Depth 145.5 - 146 cm	-3.156612416	-9.014220972
544.2201711				
539.5188755				
534.8237301				
530.1347584	69317	Pretty d18O I-14D-surface Depth 147.5 - 148 cm	-14.55082438	-17.3644104
525.4519837				
520.7754292				
516.1051178				
511.4410722				
506.7833149				
502.1318683	69103	Pretty d18O I-14D-surface Depth 150.5 - 151 cm	-4.662910171	-11.9279062
497.4867544	68078	Pretty d18O I-14D-surface Depth 151 - 151.5 cm	-0.311509583	-7.740254674
492.8479951	69104	Pretty d18O I-14D-surface Depth 151.5 - 152 cm	-4.756542515	-11.28779471
488.2156121	68080	Pretty d18O I-14D-surface	-0.985611939	-10.84856763

		Depth 152 - 152.5 cm		
483.5896269	68081	Pretty d18O I-14D-surface Depth 152.5 - 153 cm	-1.941509126	-9.602486668
478.9700607	68086	Pretty d18O I-14D-surface Depth 153 - 153.5 cm	-1.768347517	-8.503054048
474.3569347	68087	Pretty d18O I-14D-surface Depth 153.5 - 154 cm	-1.960053206	-7.881363459
469.7502697	69105	Pretty d18O I-14D-surface Depth 154 - 154.5 cm	-13.8002875	-15.11481675
465.1500864	68089	Pretty d18O I-14D-surface Depth 154.5 - 155 cm	-1.983233305	-7.483795057
460.5564051	67058	I14 155-155.5	-0.22377782	-8.687656
455.9692462	68090	Pretty d18O I-14D-surface Depth 155.5 - 156 cm	-3.462875445	-6.388022146
451.3886298	69106	Pretty d18O I-14D-surface Depth 156 - 156.5 cm	-7.234167869	-9.909026734
446.8145756	69107	Pretty d18O I-14D-surface Depth 156.5 - 157 cm	-1.113601397	-4.139835176
442.2471033	69108	Pretty d18O I-14D-surface Depth 157 - 157.5 cm	1.275696101	-4.16098069
437.6862324	69109	Pretty d18O I-14D-surface Depth 157.5 - 158 cm	0.938619661	-4.650315471
433.1319821	68095	Pretty d18O I-14D-surface Depth 158 -	0.199705586	-5.457269453

		158.5 cm		
428.5843714	68096	Pretty d18O I-14D-surface Depth 158.5 - 159 cm	0.517561135	-5.519387183
424.0434192	68879	I14 159 - 159.5 cm	0.630303857	-4.662571974
419.5091441	68098	Pretty d18O I-14D-surface Depth 159.5 - 160 cm	0.397509102	-4.791855672
414.9815646	67059	I14 160-160.5	0.395324257	-7.732415665
410.460699	68100	Pretty d18O I-14D-surface Depth 160.5 - 161 cm	1.134176843	-4.08052554
405.9465652				
401.4391811	68155	E14D-1 Depth 50 - 50.5 cm < 63 um	-0.326835351	-6.95520579
396.9385643	68156	Pretty d18O E14D-1 Depth 50.5 - 51 cm < 63 um	-0.40168041	-6.280341342
392.4447323	69290	Pretty d18O E14D-1 Depth 51 - 51.5 cm < 63 um	-5.080377411	-5.930351724
387.9577024	69291	Pretty d18O E14D-1 Depth 51.5 - 52 cm < 63 um	-1.606262798	-5.414120093
383.4774916	68159	Pretty d18O E14D-1 Depth 52 - 52.5 cm < 63 um	1.114284412	-3.934993749
379.0041168	68160	Pretty d18O E14D-1 Depth 52.5 - 53 cm < 63 um	1.123814353	-4.660674625

374.5375946	68161	Pretty d18O E14D-1 Depth 53 - 53.5 cm < 63 um	0.768469294	-5.093910703
370.0779415	68162	Pretty d18O E14D-1 Depth 53.5 - 54 cm < 63 um	-0.133750766	-5.659861016
365.6251738	68163	Pretty d18O E14D-1 Depth 54 - 54.5 cm < 63 um	0.861779175	-4.698970967
361.1793075	68164	Pretty d18O E14D-1 Depth 54.5 - 55 cm < 63 um	0.456934116	-5.094885519
356.7403585	68165	Pretty d18O E14D-1 Depth 55 - 55.5 cm < 63 um	1.228339056	-4.606641967
352.3083426	68166	Pretty d18O E14D-1 Depth 55.5 - 56 cm < 63 um	1.232868997	-4.009776061
347.8832751				
343.4651715	68168	Pretty d18O E14D-1 Depth 56 - 56.5 cm < 63 um	0.994803879	-4.278407497
339.0540468	68169	Pretty d18O E14D-1 Depth 56.5 - 57 cm < 63 um	0.800333819	-4.284395652
334.6499158	68170	Pretty d18O E14D-1 Depth 57 - 57.5 cm < 63 um	1.36711376	-3.845171418
330.2527935	68171	Pretty d18O	1.306643701	-

		E14D-1 Depth 57.5 - 58 cm < 63 um		3.745600928
325.8626942	68172	Pretty d18O E14D-1 Depth 58 - 58.5 cm < 63 um	1.498673641	-3.741980182
321.4796323	68173	Pretty d18O E14D-1 Depth 58.5 - 59 cm < 63 um	1.524078582	-3.769135771
317.103622	68174	Pretty d18O E14D-1 Depth 59 - 59.5 cm < 63 um	0.886608523	-3.990419001
312.7346773	68175	Pretty d18O E14D-1 Depth 59.5 - 60 cm < 63 um	1.550638464	-3.788632091
308.3728118	68176	Pretty d18O E14D-1 Depth 60 - 60.5 cm < 63 um	1.421543404	-3.933183376
304.0180391	68177	Pretty d18O E14D-1 Depth 60.5 - 61 cm < 63 um	1.667073345	-3.503289524
299.6703727	68178	Pretty d18O E14D-1 Depth 61 - 61.5 cm < 63 um	1.468478286	-3.651043776
295.3298258	68182	Pretty d18O E14D-1 Depth 61.5 - 62 cm < 63 um	1.068848048	-3.89822926
290.9964113	68183	Pretty d18O E14D-1 Depth 62 -	1.203752989	-3.832081032

		62.5 cm < 63 um		
286.6701421	68184	Pretty d18O E14D-1 Depth 62.5 - 63 cm < 63 um	0.75953293	-4.388283185
282.3510308	68185	Pretty d18O E14D-1 Depth 63 - 63.5 cm < 63 um	0.874437871	-4.186078496
278.0390899	68186	Pretty d18O E14D-1 Depth 63.5 - 64 cm < 63 um	1.898092811	-3.690732713
273.7343315	68187	Pretty d18O E14D-1 Depth 64 - 64.5 cm < 63 um	1.420622752	-3.938893013
269.4367679	68188	Pretty d18O E14D-1 Depth 64.5 - 65 cm < 63 um	1.528152693	-3.848792163
265.1464108	68189	Pretty d18O E14D-1 Depth 65 - 65.5 cm < 63 um	1.799057633	-3.820104721
260.8632719	68190	Pretty d18O E14D-1 Depth 65.5 - 66 cm < 63 um	0.932587574	-4.738799164
256.5873629	68191	Pretty d18O E14D-1 Depth 66 - 66.5 cm < 63 um	0.407242515	-5.564886087
252.3186949	68192	Pretty d18O E14D-1 Depth 66.5 - 67 cm < 63 um	1.023147456	-5.243336069

248.0572792	68194	Pretty d18O E14D-1 Depth 67 - 67.5 cm < 63 um	0.615207337	-5.747176677
243.8031267	68195	Pretty d18O E14D-1 Depth 67.5 - 68 cm < 63 um	0.337112278	-5.632009131
239.5562482	68196	Pretty d18O E14D-1 Depth 68 - 68.5 cm < 63 um	0.424517218	-5.563354233
235.3166543	68197	Pretty d18O E14D-1 Depth 68.5 - 69 cm < 63 um	0.361047159	-5.018153575
231.0843553	68198	Pretty d18O E14D-1 Depth 69 - 69.5 cm < 63 um	1.4235771	-4.195965916
226.8593615	68199	Pretty d18O E14D-1 Depth 69.5 - 70 cm < 63 um	1.34910704	-4.418562163
222.641683	68200	Pretty d18O E14D-1 Depth 70 - 70.5 cm < 63 um	1.203886981	-4.1366414
218.4313295	68201	Pretty d18O E14D-1 Depth 70.5 - 71 cm < 63 um	1.207541922	-3.97858195
214.2283109	68202	Pretty d18O E14D-1 Depth 71 - 71.5 cm < 63 um	1.402321863	-3.851020314
210.0326365	68203	Pretty d18O E14D-1	0.782226803	-4.461951422

		Depth 71.5 - 72 cm < 63 um		
205.8443157	68204	Pretty d18O E14D-1 Depth 72 - 72.5 cm < 63 um	1.592965077	-3.931048065
201.6633576	68205	Pretty d18O E14D-1 Depth 72.5 - 73 cm < 63 um	1.407340256	-4.213094825
197.4897713	68206	Pretty d18O E14D-1 Depth 73 - 73.5 cm < 63 um	0.841691625	-4.596058251
193.3235653	68210	Pretty d18O E14D-1 Depth 73.5 - 74 cm < 63 um	-0.147974326	-5.634933579
189.1647485	68211	Pretty d18O E14D-1 Depth 74 - 74.5 cm < 63 um	-0.888783671	-6.467008657
185.013329	68212	Pretty d18O E14D-1 Depth 74.5 - 75 cm < 63 um	0.25274627	-4.848674852
180.8693153	68213	Pretty d18O E14D-1 Depth 75 - 75.5 cm < 63 um	-0.06084879	-5.105747755
176.7327154	68214	Pretty d18O E14D-1 Depth 75.5 - 76 cm < 63 um	-0.006943849	-5.271466473
172.6035371	68215	Pretty d18O E14D-1 Depth 76 - 76.5 cm < 63	-0.031163908	-5.441920012

		um		
168.4817882				
164.3674761				
160.2606083	68218	Pretty d18O E14D-1 Depth 77.5 - 78 cm < 63 um	-2.376074086	-6.480238303
156.1611919	69295	Pretty d18O E14D-1 Depth 78 - 78.5 cm < 63 um	-0.044829612	-4.007273259
152.0692339				
147.9847411	68221	Pretty d18O E14D-1 Depth 78.5 - 79 cm < 63 um	1.003057403	-4.565142658
143.9077202	68222	Pretty d18O E14D-1 Depth 79 - 79.5 cm < 63 um	1.266384962	-4.166940272
139.8381776	68223	Pretty d18O E14D-1 Depth 79.5 - 80 cm < 63 um	1.833350617	-3.949281766
135.7761197	68224	Pretty d18O E14D-1 Depth 80 - 80.5 cm < 63 um	1.307480558	-4.675296865
131.7215526	68225	Pretty d18O E14D-1 Depth 80.5 - 81 cm < 63 um	2.034760499	-3.93958931
127.6744822	68226	Pretty d18O E14D-1 Depth 81 - 81.5 cm < 63 um	1.633165439	-4.468775134
123.6349143	68227	Pretty d18O E14D-1 Depth 81.5 -	0.37919538	-5.893120557

		82 cm < 63 um		
119.6028545	68228	Pretty d18O E14d-1 Depth 82 - 82.5 cm < 63 um	1.028100321	-5.416157018
115.5783083	68229	Pretty d18O E14D-1 Depth 82.5 - 83 cm < 63 um	-0.664744738	-6.340421838
111.5612809	68230	Pretty d18O E14D-1 Depth 83 - 83.5 cm < 63 um	-0.031339798	-7.193803609
107.5517774	68231	Pretty d18O E14D-1 Depth 83.5 - 84 cm < 63 um	-0.207309857	-6.465755322
103.5498027	68232	Pretty d18O E14D-1 Depth 84 - 84.5 cm < 63 um	0.817595084	-5.887410921
99.55536154	68233	Pretty d18O E14D-1 Depth 84.5 - 85 cm < 63 um	1.354750024	-5.739935187
95.56845855	68803	Pretty d18O E14D-2 Depth 2 - 2.5 cm < 63 um	-0.053919538	-5.30479123
91.58909812	68804	Pretty d18O E14D-2 Depth 2.5 - 3 cm < 63 um	-1.102235543	-5.408494757
87.61728449	68805	Pretty d18O E14D-2 Depth 3 - 3.5 cm < 63 um	0.410684468	-4.781267257
83.65302171	68806	Pretty d18O E14D-2 Depth 3.5 - 4	1.918443925	-3.590877146

		cm < 63 um		
79.6963137	68807	Pretty d18O E14D-2 Depth 4 - 4.5 cm < 63 um	1.7227759	-3.754270204
75.74716418	68808	Pretty d18O E14D-2 Depth 4.5 - 5 cm < 63 um	1.463441278	-3.932487747
71.80557673	68809	Pretty d18O E14D-2 Depth 5 - 5.5 cm < 63 um	1.039832995	-4.128047141
67.87155473	68810	Pretty d18O E14D-2 Depth 5.5 - 6 cm < 63 um	0.826103033	-4.15787998
63.94510141	68811	Pretty d18O E14D-2 Depth 6 - 6.5 cm < 63 um	1.287183637	-4.199833466
60.02621985	68812	Pretty d18O E14D-2 Depth 6.5 - 7 cm < 63 um	1.178295951	-4.798637503
56.11491293	68813	Pretty d18O E14D-2 Depth 7 - 7.5 cm < 63 um	1.524486028	-4.45659953
52.21118338	68814	Pretty d18O E14D-2 Depth 7.5 - 8 cm < 63 um	1.012671828	-5.344554283
48.31503377	68815	Pretty d18O E14D-2 Depth 8 - 8.5 cm < 63 um	-0.510468471	-8.296944525
44.42646651	68816	Pretty d18O E14D-2 Depth 8.5 - 9 cm < 63 um	-0.067633686	-8.230203908
40.54548381	69306	Pretty d18O E14D-2 Depth 9 - 9.5 cm < 63 um	-6.738025914	-11.51913332
36.67208775	68818	Pretty d18O E14D-2	0.351593041	-8.237783906

		Depth 9.5 - 10 cm < 63 um		
32.80628025	68819	Pretty d18O E14D-2 Depth 10 - 10.5 cm < 63 um	1.655255579	-3.688060226
28.94806303	68821	Pretty d18O E14D-2 Depth 10.5 - 11 cm < 63 um	2.046478889	-3.61363424
25.09743768	68822	Pretty d18O E14D-2 Depth 11 - 11.5 cm < 63 um	1.62123742	-3.956039949
21.25440561	68823	Pretty d18O E14D-2 Depth 11.5 - 12 cm < 63 um	1.737106662	-3.986152494
17.41896809	68824	Pretty d18O E14D-2 Depth 12 - 12.5 cm < 63 um	1.646322435	-4.128008093
13.59112619	68825	Pretty d18O E14D-2 Depth 12.5 - 13 cm < 63 um	2.259704611	-3.645696927
9.770880842	68826	Pretty d18O E14D-2 Depth 13 - 13.5 cm < 63 um	2.201847087	-3.71264692
5.958232824	69298	Pretty d18O E14D-2 Depth 13.5 - 14 cm < 63 um	1.644601482	-3.62792781
2.153182738	69299	Pretty d18O E14D-2 Depth 14 - 14.5 cm < 63	1.207142832	-3.946721517

		um		
-1.64426897	68832	Pretty d18O E14D-2 Depth 14.5 - 15 cm < 63 um	0.937114035	-5.033213217
-5.434122013	68833	Pretty d18O E14D-2 Depth 15 - 15.5 cm < 63 um	1.687941321	-4.291501532
-9.216376265	69300	Pretty d18O E14D-2 Depth 15.5 - 16 cm < 63 um	1.452894778	-3.39895252
-12.99103176	69301	Pretty d18O E14D-2 Depth 16 - 16.5 cm < 63 um	1.71025308	-2.824271638
-16.75808869	68836	Pretty d18O E14D-2 Depth 16.5 - 17 cm < 63 um	1.749497797	-3.369830309
-20.5175474	68837	Pretty d18O E14D-2 Depth 17 - 17.5 cm < 63 um	2.064920299	-3.160653289
-24.26940841	68838	Pretty d18O E14D-2 Depth 17.5 - 18 cm < 63 um	2.093843115	-2.82258716
-28.01367237	68839	Pretty d18O E14D-2 Depth 18 - 18.5 cm < 63 um	2.390829985	-2.697965646
-31.75034012	68840	Pretty d18O E14D-2 Depth 18.5 - 19 cm < 63 um	2.4084589	-2.491352609
-				

35.47941264				
-39.20089106	68843	Pretty d18O E14D-2 Depth 19.5 - 20 cm < 63 um	1.900262999	-2.818695536
-42.91477668	68844	Pretty d18O E14D-2 Depth 20 - 20.5 cm < 63 um	2.050636769	-2.790628971
-46.62107095	68845	Pretty d18O E14D-2 Depth 20.5 - 21 cm < 63 um	2.126396055	-2.819203127
-50.31977546	68846	Pretty d18O E14D-2 Depth 21 - 21.5 cm < 63 um	2.322858905	-2.623591908
-54.010892	69303	Pretty d18O E14D-2 Depth 21.5 - 22 cm < 63 um	1.906804175	-3.070963919
-57.69442246	68848	Pretty d18O E14D-2 Depth 22 - 22.5 cm < 63 um	1.977155196	-3.221181276
-61.37036892	68849	Pretty d18O E14D-2 Depth 22.5 - 23 cm < 63 um	2.185036511	-3.113351522
-65.0387336	68850	Pretty d18O E14D-2 Depth 23 - 23.5 cm < 63 um	1.843716316	-3.586860022
-68.69951888	68851	Pretty d18O E14D-2 Depth 23.5 - 24 cm < 63 um	1.988520248	-3.373427455
-	68852	Pretty d18O	1.880421474	-

72.35272729		E14D-2 Depth 24 - 24.5 cm < 63 um		4.095116217
-75.99836151	68853	Pretty d18O E14D-2 Depth 24.5 - 25 cm < 63 um	1.522694279	-4.042854973
-79.63642438	68858	Pretty d18O E14D-2 Depth 25 - 25.5 cm < 63 um	1.930223722	-4.309496217
-83.26691888	69304	Pretty d18O E14D-2 Depth 25.5 - 26 cm < 63 um	2.137417399	-3.570655955
-86.88984816	68860	Pretty d18O E14D-2 Depth 26 - 26.5 cm < 63 um	2.011055764	-4.218399678
-90.5052155	68861	Pretty d18O E14D-2 Depth 26.5 - 27 cm < 63 um	1.379385042	-4.50933925
-94.11302435	68862	Pretty d18O E14D-2 Depth 27 - 27.5 cm < 63 um	-1.340718915	-10.13220004
-97.71327828	68863	Pretty d18O E14D-2 Depth 27.5 - 28 cm < 63 um	-1.516242987	-9.034462203
-101.3059811	68864	Pretty d18O E14D-2 Depth 28 - 28.5 cm < 63 um	0.734707334	-4.25605651
-104.8911366	68865	Pretty d18O E14D-2 Depth 28.5 -	0.462182654	-4.867260902

		29 cm < 63 um		
-108.4687488	68866	Pretty d18O E14D-2 Depth 29 - 29.5 cm < 63 um	1.77329537	-3.940634743
-112.0388221	68867	Pretty d18O E14D-2 Depth 29.5 - 30 cm < 63 um	1.598388192	-4.006689673
-115.6013606	68868	Pretty d18O E14D-2 Depth 30 - 30.5 cm < 63 um	0.25547577	-8.112038978
-119.1563689				
-122.7038516	68870	Pretty d18O E14D-2 Depth 31 - 31.5 cm < 63 um	1.324291599	-3.616350373
-126.2438135	68871	Pretty d18O E14D-2 Depth 31.5 - 32 cm < 63 um	1.630620851	-3.360741946
-129.7762595	68872	Pretty d18O E14D-2 Depth 32 - 32.5 cm < 63 um	2.058276491	-3.484975987
-133.3011947	68873	Pretty d18O E14D-2 Depth 32.5 - 33 cm < 63 um	2.232193061	-3.399289725
-136.8186243	68874	Pretty d18O E14D-2 Depth 33 - 33.5 cm < 63 um	2.117018991	-3.892205913
-140.3285537	68875	Pretty d18O E14D-2 Depth 33.5 -	2.262136114	-3.997531743

		34 cm < 63 um		
-143.8309884	68876	Pretty d18O E14D-2 Depth 34 - 34.5 cm < 63 um	2.204610764	-4.194629527
-157.7658953	69032	Pretty d18O E14D-3 Depth 16 - 16.5 cm < 63 um	1.779473351	-4.654538827
-164.6885344	69033	Pretty d18O E14D-3 Depth 17 - 17.5 cm < 63 um	0.477178325	-5.555377956
-171.5813652	69034	Pretty d18O E14D-3 Depth 18 - 18.5 cm < 63 um	1.86568055	-4.656693601
-178.4444415				
-185.2778196	69036	Pretty d18O E14D-3 Depth 20 - 20.5 cm < 63 um	-3.425427856	-8.078023029
-192.0815576	69037	Pretty d18O E14D-3 Depth 21 - 21.5 cm < 63 um	-1.312785161	-7.482320402
-198.8557163	69038	Pretty d18O E14D-3 Depth 22 - 22.5 cm < 63 um	-0.471604261	-6.757167169
-205.6003583	69039	Pretty d18O E14D-3 Depth 23 - 23.5 cm < 63 um	-3.057568525	-8.791704657
-212.3155488	69322	Pretty d18O E14D-3 Depth 24 -	0.146877091	-5.220438619

		24.5 cm < 63 um		
-219.001355	69323	Pretty d18O E14D-3 Depth 25 - 25.5 cm < 63 um	-3.810713271	-8.790780764
-225.6578462				
-232.2850941	69043	Pretty d18O E14D-3 Depth 27 - 27.5 cm < 63 um	0.695923474	-5.05362347
-238.8831724	69044	Pretty d18O E14D-3 Depth 28 - 28.5 cm < 63 um	-4.755661566	-13.14637952
-245.452157				
-251.9921259				
-258.5031593	69047	Pretty d18O E14D-3 Depth 31 - 31.5 cm < 63 um	-4.407308973	-13.56783276
-264.9853395				
-271.4387508				
-277.8634796	69050	Pretty d18O E14D-3 Depth 34 - 34.5 cm < 63 um	0.178662302	-8.153029682
-284.2596146	69051	Pretty d18O E14D-3 Depth 35 - 35.5 cm < 63 um	-1.788749579	-10.28295183
-290.6272463	69052	Pretty d18O E14D-3 Depth 36 - 36.5 cm < 63 um	-6.420117795	-14.92749508
-	69053	Pretty d18O	-11.2059542	-

296.9664673		E14D-3 Depth 37 - 37.5 cm < 63 um		15.66528054
-303.2773723	69054	Pretty d18O E14D-3 Depth 38 - 38.5 cm < 63 um	-2.163404806	-8.443780503
-309.560058				
-315.8146231				
-322.0411684	69061	Pretty d18O E14D-3 Depth 41 - 41.5 cm < 63 um	-3.577706266	-11.08294754
-328.2397965	69062	Pretty d18O E14D-3 Depth 42 - 42.5 cm < 63 um	1.71428309	-4.504422915
-334.4106121	69063	Pretty d18O E14D-3 Depth 43 - 43.5 cm < 63 um	1.306403482	-4.939304165
-340.5537218				
-346.6692342	69065	Pretty d18O E14D-3 Depth 45 - 45.5 cm < 63 um	-1.250741148	-5.864803484
-352.7572599	69066	Pretty d18O E14D-3 Depth 46 - 46.5 cm < 63 um	-1.607651536	-5.963923082
-358.8179112	69067	Pretty d18O E14D-3 Depth 47 - 47.5 cm < 63 um	-1.951347682	-6.430647102
-364.8513026	69068	Pretty d18O E14D-3 Depth 48 -	-3.895351477	-5.783065729

		48.5 cm < 63 um		
-370.8575502	69069	Pretty d18O E14D-3 Depth 49 - 49.5 cm < 63 um	-3.758930158	-8.244248442
-376.8367723	69071	Pretty d18O E14D-3 Depth 50 - 50.5 cm < 63 um	-0.597580036	-5.73896469
-382.7890887	69072	Pretty d18O E14D-3 Depth 51 - 51.5 cm < 63 um	1.455481708	-4.072359971
-388.7146215	69073	Pretty d18O E14D-3 Depth 52 - 52.5 cm < 63 um	2.288284599	-3.266577152
-394.6134943	69074	Pretty d18O E14D-3 Depth 53 - 53.5 cm < 63 um	2.243028966	-3.12554002
-400.4858327				
-406.331764	69076	Pretty d18O E14D-3 Depth 55 - 55.5 cm < 63 um	2.277173848	-3.497096913
-412.1514175	69077	Pretty d18O E14D-3 Depth 56 - 56.5 cm < 63 um	1.862030902	-4.561596248
-417.9449241	69078	Pretty d18O E14D-3 Depth 57 - 57.5 cm < 63 um	1.762231912	-5.026021843
-423.7124166	69079	Pretty d18O E14D-3 Depth 58 -	0.466858631	-5.047282278

		58.5 cm < 63 um		
-429.4540296	69080	Pretty d18O E14D-3 Depth 59 - 59.5 cm < 63 um	1.104396374	-6.436947251
-435.1698993	69081	Pretty d18O E14D-3 Depth 60 - 60.5 cm < 63 um	1.894626033	-4.64663799
-440.8601639	69082	Pretty d18O E14D-3 Depth 61 - 61.5 cm < 63 um	1.825786124	-4.002647906
-446.5249631	69083	Pretty d18O E14D-3 Depth 62 - 62.5 cm < 63 um	2.019217459	-3.656208152
-452.1644385	69087	Pretty d18O E14D-3 Depth 63 - 63.5 cm < 63 um	2.228254185	-3.887582982
-457.7787332	69139	Pretty d18O D14D-1 Depth 14 - 14.5 cm < 63 um	-1.42778597	-9.665893435
-463.3679922	69140	Pretty d18O D14D-1 Depth 15 - 15.5 cm < 63 um	-0.518422796	-9.086035399
-468.9323622	69141	Pretty d18O D14D-1 Depth 16 - 16.5 cm < 63 um	-0.925499227	-9.166654601
-474.4719913				
-479.9870296				
-	69144	Pretty d18O	-0.34590286	-

485.4776286		D14D-1 Depth 19 - 19.5 cm < 63 um		10.96084406
-490.9439416	69145	Pretty d18O D14D-1 Depth 20 - 20.5 cm < 63 um	-0.11639633	-10.25113423
-496.3861234	69146	Pretty d18O D14D-1 Depth 21 - 21.5 cm < 63 um	0.536157659	-8.029478429
-501.8043305	69147	Pretty d18O D14D-1 Depth 22 - 22.5 cm < 63 um	-0.157675833	-11.56827792
-507.198721	69148	Pretty d18O D14D-1 Depth 23 - 23.5 cm < 63 um	-2.066503876	-9.451513189
-512.5694544	69149	Pretty d18O D14D-1 Depth 24 - 24.5 cm < 63 um	-1.371743678	-11.48579882
-517.9166921	69150	Pretty d18O D14D-1 Depth 25 - 25.5 cm < 63 um	-1.423721364	-10.01170228
-523.2405967				
-528.5413327				
-533.8190659	69153	Pretty d18O D14D-1 Depth 28 - 28.5 cm < 63 um	-0.468626976	-10.90183723
-539.0739636				
-544.3061948				

-549.5159299				
-554.7033407				
-559.8686006	69159	Pretty d18O D14D-1 Depth 33 - 33.5 cm < 63 um	-2.90471592	-10.0936854
-565.0118844	69160	Pretty d18O D14D-1 Depth 34 - 34.5 cm < 63 um	-2.476647824	-11.49399301
-570.1333684	69161	Pretty d18O D14D-1 Depth 35 - 35.5 cm < 63 um	0.450102974	-8.550009761
-575.2332302	69162	Pretty d18O D14D-1 Depth 36 - 36.5 cm < 63 um	-2.125437728	-8.453333127
-580.311649	69166	Pretty d18O D14D-1 Depth 37 - 37.5 cm < 63 um	0.49240772	-7.600104361
-585.3688054	69167	Pretty d18O D14D-1 Depth 38 - 38.5 cm < 63 um	-2.174564912	-6.95394619
-590.4048811	69168	Pretty d18O D14D-1 Depth 39 - 39.5 cm < 63 um	-1.66119288	-6.699258507
-595.4200596	69169	Pretty d18O D14D-1 Depth 40 - 40.5 cm < 63 um	-1.0973212	-7.319497828
-600.4145256	69170	Pretty d18O D14D-1 Depth 41 -	-0.902138008	-10.09377037

		41.5 cm < 63 um		
-605.3884649				
-610.3420652	69172	Pretty d18O D14D-1 Depth 43 - 43.5 cm < 63 um	1.195644352	-8.188918989
-615.275515	69173	Pretty d18O D14D-1 Depth 44 - 44.5 cm < 63 um	0.111221596	-8.740526371
-620.1890045	69174	Pretty d18O D14D-1 Depth 45 - 45.5 cm < 63 um	0.877091868	-8.207925412
-625.0827249	69175	Pretty d18O D14D-1 Depth 46 - 46.5 cm < 63 um	0.122306885	-8.86095822
-629.956869	69176	Pretty d18O D14D-1 Depth 47 - 47.5 cm < 63 um	-0.702315417	-11.86338288
-634.8116306				
-639.647205	69178	Pretty d18O D14D-1 Depth 49 - 49.5 cm < 63 um	0.826099541	-5.991561374
-644.4637887	69179	Pretty d18O D14D-1 Depth 50 - 50.5 cm < 63 um	-0.766610091	-8.56979418
-649.2615794	69180	Pretty d18O D14D-1 Depth 51 - 51.5 cm < 63 um	-2.526535142	-6.637289981
-				

654.0407759				
-658.8015786	69182	Pretty d18O D14D-1 Depth 53 - 53.5 cm < 63 um	-1.099168748	-10.42652564
-663.5441888	69183	Pretty d18O D14D-1 Depth 54 - 54.5 cm < 63 um	-1.013935196	-9.058161554
-668.268809				
-672.975643	69185	Pretty d18O D14D-1 Depth 56 - 56.5 cm < 63 um	-0.522962486	-8.780624316
-677.6648958	69186	Pretty d18O D14D-1 Depth 57 - 57.5 cm < 63 um	0.610921772	-8.198242163
-682.3367734	69187	Pretty d18O D14D-1 Depth 58 - 58.5 cm < 63 um	1.379255441	-5.398703833
-686.9914832				
-691.6292334	69189	Pretty d18O D14D-1 Depth 60 - 60.5 cm < 63 um	1.34119595	-6.199946082
-696.2502336	69194	Pretty d18O D14D-1 Depth 61 - 61.5 cm < 63 um	2.052625138	-5.794904019
-700.8546944	69195	Pretty d18O D14D-1 Depth 62 - 62.5 cm < 63 um	1.238595446	-6.54231075
-705.4428275	69196	Pretty d18O D14D-1 Depth 63 -	1.150036307	-7.555450892

		63.5 cm < 63 um		
-710.0148456	69197	Pretty d18O D14D-1 Depth 64 - 64.5 cm < 63 um	1.183661683	-6.014745716
-714.5709627				
-719.1113936	69199	Pretty d18O D14D-1 Depth 66 - 66.5 cm < 63 um	1.940663724	-5.964098535
-723.6363543	69200	Pretty d18O D14D-1 Depth 67 - 67.5 cm < 63 um	1.801604937	-7.09461011
-728.1460619	69201	Pretty d18O D14D-1 Depth 68 - 68.5 cm < 63 um	1.911965143	-5.943460298
-732.6407343	69202	Pretty d18O D14D-1 Depth 69 - 69.5 cm < 63 um	1.037828553	-7.248276163
-737.1205906	69204	Pretty d18O E14D-4 Depth 30 - 30.5 cm < 63 um	2.768365272	-4.950183401
-741.5858508	69205	Pretty d18O E14D-4 Depth 31 - 31.5 cm < 63 um	2.541732705	-5.137095967
-746.0367359	69206	Pretty d18O E14D-4 Depth 32 - 32.5 cm < 63 um	2.378163113	-5.303955828
-750.4734679	69207	Pretty d18O E14D-4 Depth 33 -	1.549476206	-6.174062682

		33.5 cm < 63 um		
-754.8962697	69208	Pretty d18O E14D-4 Depth 34 - 34.5 cm < 63 um	-0.655387695	-9.822581122
-759.3053653	69209	Pretty d18O E14D-4 Depth 35 - 35.5 cm < 63 um	2.11950638	-5.923589585
-763.7009794				
-768.0833378				
-772.4526671	69211	Pretty d18O E14D-4 Depth 38 - 38.5 cm < 63 um	0.682852978	-9.437015401
-776.8091949	69212	Pretty d18O E14D-4 Depth 39 - 39.5 cm < 63 um	0.615725397	-9.880105793
-781.1531496				
-785.4847605				
-789.8042578				
-794.1118725	69217	Pretty d18O E14D-4 Depth 43 - 43.5 cm < 63 um	3.086759394	-3.84614297

Appendix E : Composite Lithics

AGE BP	AGE BCE/BC	Lake	Core	Drive	Depth Sampled top	Depth Sampled Bottom	Lithics Wt. (g)	% Lithics
-64	2014	Pretty	Surface	I-14	0	0.5	0.054	20
-55.0279311	2005.027931	Pretty	Surface	I-14	1	1.5	0.045	29.03225806
-46.01059941	1996.010599	Pretty	Surface	I-14	2	2.5	0.043	22.99465241
-36.94881462	1986.948815	Pretty	Surface	I-14	3	3.5	0.057	23.55371901
-27.84338128	1977.843381	Pretty	Surface	I-14	4	4.5	0.075	27.37226277
-18.69509874	1968.695099	Pretty	Surface	I-14	5	5.5	0.078	22.03389831

55.93949992	46.47658647	37.0503114	27.66143327	18.31071571	8.998927409	-0.273157864	-9.50476124
1894.0605	1903.523414	1912.949689	1922.338567	1931.689284	1941.001073	1950.273158	1959.504761
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
13	12	11	10	9	8	7	6
13.5	12.5	11.5	10.5	9.5	8.5	7.5	6.5
0.111	0.091	0.092	0.106	0.056	0.069	0.058	0.059
32.45614035	31.27147766	23.35025381	28.64864865	25	22.62295082	21.80451128	23.69477912

132.8724201	123.1431053	113.4445409	103.7774454	94.14254246	84.54056046	74.97223289	65.43829822
1817.12758	1826.856895	1836.555459	1846.222555	1855.857458	1865.45944	1875.027767	1884.561702
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
21	20	19	18	17	16	15	14
21.5	20.5	19.5	18.5	17.5	16.5	15.5	14.5
0.126	0.077	0.072	0.085	0.168	0.083	0.101	0.036
29.92874109	26.92307692	30.37974684	33.33333333	36.92307692	30.97014925	40.07936508	17.39130435

211.7293509	201.7793105	191.854449	181.9554456	172.0829847	162.2377553	152.4204513	142.6317716
1738.270649	1748.220689	1758.145551	1768.044554	1777.917015	1787.762245	1797.579549	1807.368228
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
29	28	27	26	25	24	23	22
29.5	28.5	27.5	26.5	25.5	24.5	23.5	22.5
0.066	0.089	0.104	0.066	0.06	0.061	0.088	0.073
20.625	24.58563536	28.49315068	23.07692308	24.3902439	24.49799197	27.41433022	28.62745098

292.1561808	282.0285882	271.9209129	261.8337958	251.7678826	241.7238239	231.7022748	221.7038955
1657.843819	1667.971412	1678.079087	1688.166204	1698.232117	1708.276176	1718.297725	1728.296104
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
37	36	35	34	33	32	31	30
37.5	36.5	35.5	34.5	33.5	32.5	31.5	30.5
	0.038	0.044	0.068	0.05	0.059	0.073	0.042
	13.4751773	14.66666667	17.98941799	17.92114695	20.84805654	18.57506361	16.40625

373.8185869	363.5541643	353.304701	343.0708003	332.8530703	322.6521236	312.4685776	302.3030544
1576.181413	1586.445836	1596.695299	1606.9292	1617.14693	1627.347876	1637.531422	1647.696946
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
45	44	43	42	41	40	39	38
45.5	44.5	43.5	42.5	41.5	40.5	39.5	38.5
0.038	0.045	0.043	0.023	0.031	0.026	0.024	0.027
22.4852071	24.32432432	20.87378641	15.33333333	14.48598131	13.26530612	10	11.44067797

456.4016243	446.0386941	435.6860623	425.3442956	415.013965	404.6956463	394.3899197	384.0973701
1493.598376	1503.961306	1514.313938	1524.655704	1534.986035	1545.304354	1555.61008	1565.90263
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
53	52	51	50	49	48	47	46
53.5	52.5	51.5	50.5	49.5	48.5	47.5	46.5
0.0334	-0.0893	0.0131	0.044	0.028	0.043	0.034	0.031
23.62093352		10.81750619	24.58100559	18.79194631	23.62637363	22.66666667	20.66666667

539.6093152	529.1838513	518.7643159	508.3512394	497.9451569	487.5466079	477.1561364	466.7742909
1410.390685	1420.816149	1431.235684	1441.648761	1452.054843	1462.453392	1472.843864	1483.225709
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
61	60	59	58	57	56	55	54
61.5	60.5	59.5	58.5	57.5	56.5	55.5	54.5
0.0233	0.032	0.0338	0.0162	0.0206	0.0307	0.0208	0.005
12.54711901	15.15151515	13.32282223	11.31284916	13.63335539	17.01773836	12.83950617	3.903200625

623.1642387	612.7099181	602.2574401	591.8073002	581.359998	570.9160378	560.4759279	550.0401812
1326.835761	1337.290082	1347.74256	1358.1927	1368.640002	1379.083962	1389.524072	1399.959819
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
69	68	67	66	65	64	63	62
69.5	68.5	67.5	66.5	65.5	64.5	63.5	62.5
-0.0036	0.0147	0.0166	-0.041	0.0115	0.031	0.0374	0.01
	9.483870968	12.14337966		8.115737474	17.8880554	28.24773414	7.54147813

706.8071199	696.3553735	685.901662	675.4464463	664.9901917	654.5333676	644.076448	633.6199109
1243.19288	1253.644626	1264.098338	1274.553554	1285.009808	1295.466632	1305.923552	1316.380089
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
77	76	75	74	73	72	71	70
77.5	76.5	75.5	74.5	73.5	72.5	71.5	70.5
0.0298	0.0432	0.0348	0.0329	0.0179	0.0259	0.0087	0.0023
17.24537037	24.25603593	18.55010661	17.84164859	10.75721154	13.96226415	6.910246227	2.055406613

790.2964192	779.8764837	769.4510467	759.0205356	748.585382	738.1460216	727.7028943	717.2564443
1159.703581	1170.123516	1180.548953	1190.979464	1201.414618	1211.853978	1222.297106	1232.743556
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
85	84	83	82	81	80	79	78
85.5	84.5	83.5	82.5	81.5	80.5	79.5	78.5
0.059	0.068	0.05	0.214	0.055	0.0486	0.0389	-0.0165
36.64596273	34.34343434	27.47252747	58.63013699	32.73809524	28.4876905	23.59005458	

873.407922	863.0468907	852.6770867	842.2989046	831.9127431	821.5190049	811.1180969	800.71043
1076.592078	1086.953109	1097.322913	1107.701095	1118.087257	1128.480995	1138.881903	1149.28957
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
93	92	91	90	89	88	87	86
93.5	92.5	91.5	90.5	89.5	88.5	87.5	86.5
0.071	0.077	0.073	0.071	0.052	0.118	0.099	0.082
26.5917603	26.73611111	27.23880597	30.73593074	25.61576355	51.98237885	30.55555556	42.05128205

955.9343273	945.6572019	935.3682913	925.067958	914.7565686	904.4344938	894.1021081	883.7597899
994.0656727	1004.342798	1014.631709	1024.932042	1035.243431	1045.565506	1055.897892	1066.24021
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
101	100	99	98	97	96	95	94
101.5	100.5	99.5	98.5	97.5	96.5	95.5	94.5
0.026	0.039	0.025	0.025	0.026	0.016	0.07	0.083
20.3125	22.5433526	21.36752137	21.73913043	20.47244094	15.53398058	26.61596958	29.22535211

1037.684838	1027.51458	1017.329776	1007.130758	996.9178609	986.6914244	976.4517914	966.1993087
912.3151619	922.4854202	932.6702242	942.8692422	953.0821391	963.3085756	973.5482086	983.8006913
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
109	108	107	106	105	104	103	102
109.5	108.5	107.5	106.5	105.5	104.5	103.5	102.5
0.041	0.04	0.041	0.028	0.026	0.031	0.024	0.021
21.69312169	21.73913043	23.16384181	18.06451613	19.11764706	21.67832168	18.75	17.07317073

1118.48475	1108.442331	1098.382851	1088.306613	1078.213921	1068.105083	1057.980411	1047.840223
831.5152501	841.5576694	851.6171487	861.693387	871.7860795	881.8949175	892.0195886	902.1597768
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
117	116	115	114	113	112	111	110
117.5	116.5	115.5	114.5	113.5	112.5	111.5	110.5
0.017	0.025	0.023	0.025	0.026	0.026		0.038
10.625	13.29787234	14.83870968	17.12328767	19.25925926	19.40298507		22.75449102

1198.17504	1188.279494	1178.364613	1168.430669	1158.477935	1148.506693	1138.517223	1128.509812
751.8249596	761.7205056	771.6353867	781.5693314	791.5220646	801.4933074	811.4827774	821.4901882
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
125	124	123	122	121	120	119	118
125.5	124.5	123.5	122.5	121.5	120.5	119.5	118.5
0.016	0.012	0.01		0.021	0.022	0.033	0.031
8.465608466	5.504587156	7.874015748		12.28070175	14.01273885	17.0984456	10.06493506

1276.611959	1266.880434	1257.127532	1247.353495	1237.55857	1227.743007	1217.907059	1208.050983
673.388041	683.1195661	692.8724683	702.6465049	712.4414297	722.2569928	732.0929407	741.9490165
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
133	132	131	130	129	128	127	126
133.5	132.5	131.5	130.5	129.5	128.5	127.5	126.5
0.004	0.014	0.012	0.023	0	0.002	0.012	0.003
2.409638554	6.698564593	4.761904762	7.278481013		1.117318436	5.797101449	2.083333333

1353.666616	1344.114424	1334.53904	1324.940678	1315.319556	1305.675897	1296.009924	1286.321868
596.3333844	605.8855758	615.46096	625.059322	634.6804436	644.3241033	653.9900757	663.6781324
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
141	140	139	138	137	136	135	134
141.5	140.5	139.5	138.5	137.5	136.5	135.5	134.5
0.007	0.006	0.011	0.013	0.009	0.01	0.015	0.007
6.25	8.108108108	12.5	8.125	4.787234043	8.26446281	7.614213198	3.225806452

1429.224571	1419.865242	1410.481124	1401.072407	1391.63928	1382.181938	1372.700579	1363.195403
520.7754292	530.1347584	539.5188755	548.927593	558.3607198	567.8180618	577.2994211	586.8045968
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
149	148	147	146	145	144	143	142
149.5	148.5	147.5	146.5	145.5	144.5	143.5	142.5
0.02	0.009	0.011	0.013	0.014	0.03	0.021	0.013
31.25	14.28571429	17.1875	23.63636364	10.2189781	21.27659574	17.94871795	9.219858156

1503.185424	1494.030754	1484.849914	1475.643065	1466.410373	1457.152005	1447.868132	1438.558928
446.8145756	455.9692462	465.1500864	474.3569347	483.5896269	492.8479951	502.1318683	511.4410722
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
I-14	I-14	I-14	I-14	I-14	I-14	I-14	I-14
157	156	155	154	153	152	151	150
157.5	156.5	155.5	154.5	153.5	152.5	151.5	150.5
0.024	0.015	0.027	0.022	0.015	0.014	0.02	0.021
10.43478261	14.42307692	23.07692308	22.44897959	15.46391753	17.28395062	17.69911504	24.41860465

1575.462405	1566.522508	1557.555268	1548.560819	1539.539301	1530.490856	1521.415629	1512.313768
374.5375946	383.4774916	392.4447323	401.4391811	410.460699	419.5091441	428.5843714	437.6862324
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	Surface	Surface	Surface
1	1	1	1	1	I-14	I-14	I-14
54	53	52	51	50	160	159	158
54.5	53.5	52.5	51.5	50.5	160.5	159.5	158.5
0.016	0.017	0.025	0.014	0.009	0.02	0.02	0.022
9.356725146	9.941520468	8.833922261	12.06896552	7.438016529	12.42236025	11.29943503	12.02185792

1645.981961	1637.265323	1628.520368	1619.747207	1610.945953	1602.116725	1593.259641	1584.374826
304.0180391	312.7346773	321.4796323	330.2527935	339.0540468	347.8832751	356.7403585	365.6251738
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
1	1	1	1	1	1	1	1
62	61	60	59	58	57	56	55
62.5	61.5	60.5	59.5	58.5	57.5	56.5	55.5
0.026	0.014	0.01	0.029	0.041	0.038	0.035	0.027
8.387096774	8.484848485	9.708737864	10.39426523	16.94214876	20.65217391	16.35514019	14.59459459

1714.683346	1706.196873	1697.681305	1689.136728	1680.563232	1671.96091	1663.329858	1654.670174
235.3166543	243.8031267	252.3186949	260.8632719	269.4367679	278.0390899	286.6701421	295.3298258
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
1	1	1	1	1	1	1	1
70	69	68	67	66	65	64	63
70.5	69.5	68.5	67.5	66.5	65.5	64.5	63.5
0.007	0.011	0.022	0.012	0.009	0.014	0.011	0.016
5.147058824	8.088235294	14.19354839	8.163265306	7.03125	5.147058824	6.918238994	8.695652174

1781.518212	1773.267285	1764.986671	1756.676435	1748.336642	1739.967363	1731.56867	1723.140638
168.4817882	176.7327154	185.013329	193.3235653	201.6633576	210.0326365	218.4313295	226.8593615
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
1	1	1	1	1	1	1	1
78	77	76	75	74	73	72	71
78.5	77.5	76.5	75.5	74.5	73.5	72.5	71.5
0.027	0.017	0.02	0.013	0.012	0.015	0.018	0.017
22.68907563	18.27956989	11.9760479	8.843537415	10.52631579	8.771929825	8.219178082	6.640625

1846.450197	1838.438719	1830.397145	1822.325518	1814.22388	1806.09228	1797.930766	1789.739392
103.5498027	111.5612809	119.6028545	127.6744822	135.7761197	143.9077202	152.0692339	160.2606083
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
2	1	1	1	1	1	1	1
2	85	84	83	82	81	80	79
2.5	85.5	84.5	83.5	82.5	81.5	80.5	79.5
-0.022	0.015	0.027	0.016	0.016	0.014	0.03	0.015
	13.63636364	17.08860759	14.28571429	15.38461538	10.44776119	14.92537313	7.317073171

1909.454516	1901.684966	1893.885087	1886.054899	1878.194423	1870.303686	1862.382716	1854.431541
40.54548381	48.31503377	56.11491293	63.94510141	71.80557673	79.6963137	87.61728449	95.56845855
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
2	2	2	2	2	2	2	2
10	9	8	7	6	5	4	3
10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5
0.009	0.005	0.015	0.005	0.01	0.015	0.013	0.02
6.666666667	7.462686567	16.12903226	6.024096386	10.20408163	9.493670886	9.77443609	16.39344262

1970.517547	1962.991032	1955.434122	1947.846817	1940.229119	1932.581032	1924.902562	1917.19372
-20.5175474	-12.99103176	-5.434122013	2.153182738	9.770880842	17.41896809	25.09743768	32.80628025
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
2	2	2	2	2	2	2	2
18	17	16	15	14	13	12	11
18.5	17.5	16.5	15.5	14.5	13.5	12.5	11.5
0.023	0.013	0.023	0.017	0.015	0.028	0.013	0.017
15.86206897	9.285714286	11.61616162	14.28571429	18.29268293	16.47058824	11.11111111	11.25827815

2029.636424	2022.352727	2015.038734	2007.694422	2000.319775	1992.914777	1985.479413	1978.013672
-79.63642438	-72.35272729	-65.0387336	-57.69442246	-50.31977546	-42.91477668	-35.47941264	-28.01367237
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
E-14	E-14	E-14	E-14	E-14	E-14	E-14	E-14
2	2	2	2	2	2	2	2
26	25	24	23	22	21	20	19
26.5	25.5	24.5	23.5	22.5	21.5	20.5	19.5
0.011	0.014	0.019	0.008	0.014	0.019	0.013	0.033
10	10.29411765	15.57377049	6.722689076	10.85271318	10.49723757	10.92436975	15.20737327

-64	-64	-64	-64	2058.468749	2051.305981	2044.113024	2036.889848
2014	2014	2014	2014	-108.4687488	-101.3059811	-94.11302435	-86.88984816
Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty	Pretty
G.S.	G.S.	G.S.	G.S.	E-14	E-14	E-14	E-14
15-5	15-4	15-3	15-2	2	2	2	2
0	0	0	0	30	29	28	27
2	2	2	2	30.5	29.5	28.5	27.5
0.03	0.053	0.02	0.017	0.028	0.028	0.003	0.009
25.64102564	34.19354839	21.27659574	9.444444444	27.45098039	21.3740458	4.225352113	9.89010989

-64	-64	-64	-64
2014	2014	2014	2014
Pretty	Pretty	Pretty	Pretty
G.S.	G.S.	G.S.	G.S.
15-11	15-10	15-8	15-6
0	0	0	0
2	2	2	2
0.022	0.022	0.028	0.032
11.39896373	24.17582418	19.04761905	27.5862069

Appendix F: Composite $\Delta\delta^{18}O_{Pretty\text{-}Martin}$

AGE BCE/CE (PL)	1991.485213	1996.010599	2000.524872	2005.027931	2009.519674	2014
Pretty Lake d18O	-5.701771982	-8.360190281	-6.205892611	-5.419790862	-7.117277243	-6.928597897
CE/BCE (ML)	2013.516051	2013.496367	2013.450249	2013.377625	2013.278423	2013.152573
Martin Lake d18O	-8.925	-8.975	-9.05	-9.15	-9.15	-9.05
AGE BCE/CE	1989	1994	1999	2004	2009	2014
PL Filter	-0.2501372	-0.45840196	-0.62957317	-0.77114231	-0.89404779	-1.0087166
ML Filtered	1.3482611	1.2902176	1.2388998	1.2258934	1.2627113	1.3332334
ML 10 yr Butter	1.6606642	1.5547339	1.3807124	1.2531574	1.2364041	1.3082139
PL 10 yr Butter	0.89693393	0.44649842	-0.047793247	-0.47400549	-0.78256894	-1.0058318
AGE BCE/CE	1964	1974	1984	1994	2004	2014
Dd 10yr	-0.76373027	-1.10823548	-1.428505647	-1.72716289	-2.01897304	-2.3140457
zero-mean						

1954.894069	1959.504761	1964.105137	1968.695099	1973.274546	1977.843381	1982.401504	1986.948815
-4.725036097	-5.793430161	-4.704462938	-5.120984569	-5.840453946	-5.01198674	-5.504766195	-6.325079252
2012.730501	2012.919712	2013.083061	2013.220476	2013.331886	2013.417219	2013.476406	2013.509374
-9.3	-9.1	-8.975	-8.925	-8.95	-9.05	-9.05	-8.95
1949	1954	1959	1964	1969	1974	1979	1984
1.0357336	1.0433859	1.0117809	0.91660629	0.74962489	0.52204156	0.25982931	-0.006100959
1.6745216	1.5501307	1.4254359	1.34318	1.3202646	1.3421868	1.3738321	1.3806194
1.4353404	1.3820225	1.1379447	0.93552312	0.92440248	1.1135363	1.3915635	1.6072057
1.4380549	1.0749968	0.83406852	0.78924185	0.92151364	1.1237318	1.2501317	1.1852604
1884	1894	1904	1914	1924	1934	1944	1954
0.0027145	-0.3070257	-0.30387618	-0.14628127	-0.00288884	0.0101955	-0.1414318	-0.4219453

1917.64885	1922.338567	1927.018744	1931.689284	1936.350093	1941.001073	1945.642127	1950.273158
-4.521517357	-4.683012825	-5.294276657	-5.182549649	-4.919557123	-4.903534379	-4.710132325	-4.46797527
2010.294243	2010.687812	2011.056082	2011.398984	2011.716447	2012.0084	2012.274774	2012.515498
-9	-9.2	-9.3	-9.3	-9.325	-9.375	-9.4	-9.4
1909	1914	1919	1924	1929	1934	1939	1944
0.71134133	0.84330664	0.95443315	1.0178786	1.0340803	1.0238774	1.0134243	1.0185431
0.85786664	0.96837644	1.1133458	1.2899858	1.4779635	1.6409129	1.7393444	1.7489933
-2.4709997	-3.1406452	-3.3319778	-2.9351099	-2.0224089	-0.83716039	0.29502818	1.0944644
2.4333255	2.2324943	2.0978311	2.0683671	2.1105524	2.1341722	2.0440273	1.7980164
1804	1814	1824	1834	1844	1854	1864	1874
4.9043252	5.3731395	5.4298089	5.003477	4.1329613	2.97133259	1.74899912	0.703552

1879.79908	1884.561702	1889.31554	1894.0605	1898.796489	1903.523414	1908.241178	1912.949689
-4.758182666	-4.553668361	-5.504272562	-4.652747435	-5.315683235	-5.444119756	-5.91564703	-4.761868672
2006.243345	2006.836785	2007.405486	2007.949376	2008.468387	2008.962448	2009.431492	2009.875447
-9.1	-9.3	-9.375	-9.325	-9.35	-9.45	-9.35	-9.05
1869	1874	1879	1884	1889	1894	1899	1904
1.9997088	1.8023304	1.5165963	1.1907408	0.89061996	0.67680151	0.58332262	0.60697488
1.2183421	1.0683444	0.9137747	0.78821027	0.71349342	0.69368338	0.7188584	0.77574069
0.53420191	0.80079945	0.91479687	0.8629509	0.61124272	0.1166709	-0.62941456	-1.5516273
2.9895792	2.8362886	2.6794582	2.6084599	2.6354366	2.6986245	2.7103493	2.6169386
1724	1734	1744	1754	1764	1774	1784	1794
2.45537729	2.03548915	1.76466133	1.745509	2.02419388	2.5819536	3.33976386	4.1685659

1841.392986	1846.222555	1851.044076	1855.857458	1860.662609	1865.45944	1870.247856	1875.027767
-3.744757436	-4.098745618	-3.786721109	-3.794582621	-3.940589355	-3.873894099	-3.590192831	-4.229149492
2000.613445	2001.402327	2002.167019	2002.907452	2003.623559	2004.315271	2004.982518	2005.625233
-9.625	-9.675	-9.6	-9.4	-9.3	-9.3	-9.225	-9.075
1829	1834	1839	1844	1849	1854	1859	1864
2.2276663	2.1492808	2.0769993	2.0343558	2.0338726	2.066888	2.101798	2.0932498
0.90786043	1.0533224	1.1719684	1.267921	1.342443	1.3874887	1.3879389	1.3312567
-1.3859796	-1.5241121	-1.6214028	-1.5724543	-1.323252	-0.8963814	-0.37731109	0.12752442
2.728132	2.4200356	2.1193967	2.0340203	2.2111743	2.5453933	2.8618732	3.0215371
1644	1654	1664	1674	1684	1694	1704	1714
4.1141116	3.9441477	3.7407995	3.6064746	3.5344263	3.4417747	3.23918429	2.89401268

1802.47751	1807.368228	1812.251614	1817.12758	1821.996036	1826.856895	1831.710066	1836.555459
-3.542609404	-3.535753937	-3.629557049	-3.759319571	-3.612791649	-3.379608776	-3.704320995	-3.981808658
1993.43976	1994.419703	1995.376001	1996.308587	1997.217392	1998.102348	1998.963388	1999.800443
-9.3	-9.3	-9.45	-9.75	-9.75	-9.45	-9.375	-9.525
1789	1794	1799	1804	1809	1814	1819	1824
2.4722764	2.4140555	2.3716686	2.3488114	2.3418555	2.3395869	2.326678	2.2903639
0.62770333	0.51052885	0.39616649	0.32737997	0.33358204	0.41962924	0.56591735	0.73919878
-1.3559899	-1.5892556	-1.7375161	-1.7607074	-1.6619201	-1.4974183	-1.3554812	-1.3118582
-2.2457368	-2.2960423	-1.9927198	-1.1684742	0.049182541	1.3255967	2.2998564	2.7601954
1564	1574	1584	1594	1604	1614	1624	1634
-0.8897469	-0.7067867	-0.2552037	0.5922332	1.711102641	2.823015	3.6553376	4.0720536

1763.098328	1768.044554	1772.984146	1777.917015	1782.843077	1787.762245	1792.674431	1797.579549
-3.096745857	-3.132930611	-3.405281215	-3.485796982	-3.234872913	-3.320206821	-3.430115305	-3.644153354
1984.757075	1985.923755	1987.067328	1988.187727	1989.284885	1990.358734	1991.409208	1992.436239
-9.225	-9.675	-9.675	-9.225	-9	-9	-9.075	-9.225
1749	1754	1759	1764	1769	1774	1779	1784
2.7982461	2.7749237	2.7539236	2.73095	2.7002241	2.6575478	2.602298	2.538102
0.73109866	0.63157459	0.58895661	0.60125463	0.65023887	0.70546823	0.73318436	0.70870648
-1.977568	-1.1492658	-0.65724534	-0.46428719	-0.48260979	-0.62632337	-0.83946295	-1.0918189
-6.8258166	-8.2726975	-8.3817808	-7.3000604	-5.5700086	-3.86827	-2.7073609	-2.2396489
1484	1494	1504	1514	1524	1534	1544	1554
-4.8482486	-7.1234317	-7.72453546	-6.83577321	-5.08739881	-3.24194663	-1.86789795	-1.14783

1723.299852	1728.296104	1733.286398	1738.270649	1743.248774	1748.220689	1753.18631	1758.145551
-3.117453259	-3.501218416	-3.011327608	-2.939495293	-2.990119346	-3.243032432	-3.123578197	-3.182462114
1974.599752	1975.948898	1977.275467	1978.579394	1979.860612	1981.119056	1982.354659	1983.567354
-9.2	-9.2	-9.375	-9.725	-9.75	-9.45	-9.225	-9.075
1709	1714	1719	1724	1729	1734	1739	1744
2.5933195	2.648218	2.718358	2.7852357	2.8319442	2.8507343	2.844637	2.823595
0.15900443	0.56755655	0.90479234	1.1187348	1.1938775	1.1493519	1.0263523	0.87276498
-3.3664549	-4.4806622	-5.434146	-5.9685192	-5.9261151	-5.3086989	-4.27503	-3.0790319
-0.60174603	0.02895416	0.98666872	1.7475356	1.7212879	0.55426786	-1.6621322	-4.385109
1404	1414	1424	1434	1444	1454	1464	1474
2.76470887	4.50961636	6.42081472	7.7160548	7.647403	5.86296676	2.6128978	-1.3060771

1683.125256	1688.166204	1693.201852	1698.232117	1703.256919	1708.276176	1713.289806	1718.297725
-3.507455348	-3.356345725	-3.420576041	-3.308295176	-3.324255654	-3.541487009	-3.123666863	-3.017402373
1963.001726	1964.529118	1966.034458	1967.517682	1968.978723	1970.417516	1971.833995	1973.228096
-9.35	-9.45	-9.45	-9.35	-9.2	-9	-8.975	-9.125
1669	1674	1679	1684	1689	1694	1699	1704
2.2879772	2.2996678	2.3656585	2.4477569	2.5115541	2.5435516	2.5534715	2.5635871
-1.4915083	-1.2699532	-1.1011264	-0.99834179	-0.92003932	-0.79819158	-0.57771062	-0.24623093
-0.96300027	-1.1605479	-1.2317619	-1.1994693	-1.1604353	-1.2596717	-1.6362094	-2.3569091
-5.3614315	-4.3814684	-2.9144142	-1.4699828	-0.51063478	-0.22090991	-0.42459347	-0.69473958
1324	1334	1344	1354	1364	1374	1384	1394
-4.39843123	-3.2209205	-1.6826523	-0.2705135	0.64980052	1.03876179	1.21161593	1.66216952

1642.616476	1647.696946	1652.772753	1657.843819	1662.910065	1667.971412	1673.027779	1678.079087
-3.5254543	-3.678958362	-3.635449289	-3.272331874	-3.399595286	-3.608436773	-3.335207965	-3.940075405
1949.996504	1951.697978	1953.377918	1955.036259	1956.672937	1958.287887	1959.881045	1961.452346
-8.975	-8.925	-9.075	-9.425	-9.575	-9.525	-9.45	-9.35
1629	1634	1639	1644	1649	1654	1659	1664
1.6543057	1.896981	2.1969809	2.4452837	2.5677654	2.5552846	2.4571594	2.3478544
-1.0937064	-0.89446417	-0.94190866	-1.183778	-1.4917434	-1.7258395	-1.7968419	-1.6975293
-2.6946828	-2.0019724	-1.2816668	-0.70192025	-0.36286529	-0.28593797	-0.42445444	-0.6863854
-7.2111317	-5.8542307	-4.5046526	-3.6651041	-3.5979293	-4.1968322	-5.0325949	-5.5559944
1244	1254	1264	1274	1284	1294	1304	1314
-4.5164489	-3.8522583	-3.2229858	-2.96318385	-3.23506401	-3.91089423	-4.60814046	-4.869609

1601.814233	1606.9292	1612.040124	1617.14693	1622.249539	1627.347876	1632.441863	1637.531422
-4.409465207	-4.423019135	-4.445875304	-4.266997798	-4.325656371	-4.671498247	-3.691194396	-3.571601322
1935.617169	1937.488612	1939.339033	1941.168366	1942.97655	1944.763519	1946.52921	1948.27356
-8.9	-8.9	-8.975	-9.125	-9.2	-9.2	-9.15	-9.05
1589	1594	1599	1604	1609	1614	1619	1624
-1.5357072	-0.37623567	0.66444966	1.3754084	1.6949753	1.7129602	1.6078948	1.5556369
-0.98985281	-1.1825999	-1.5707489	-1.9809946	-2.2282748	-2.2011398	-1.9108373	-1.4823355
1.1602842	0.8065667	0.049982555	-0.97121238	-2.0173897	-2.8326047	-3.2327418	-3.161303
-3.934712	-4.0165748	-4.3875314	-5.1886452	-6.3177497	-7.4411132	-8.1304316	-8.0665975
1164	1174	1184	1194	1204	1214	1224	1234
-5.0949962	-4.8231415	-4.437513955	-4.21743282	-4.30036	-4.6085085	-4.8976898	-4.9052945

1560.758039	1565.90263	1571.043779	1576.181413	1581.315457	1586.445836	1591.572475	1596.695299
-8.592651129	-9.649013528	-7.903881374	-9.123006033	-8.034642263	-8.780020112	-7.79239053	-4.850749215
1919.896375	1921.93373	1923.950565	1925.94682	1927.92243	1929.877333	1931.811466	1933.724765
-9.25	-9.15	-9.05	-8.95	-8.825	-8.675	-8.675	-8.825
1549	1554	1559	1564	1569	1574	1579	1584
-2.532858	-2.134857	-2.1030988	-2.4159794	-2.8762211	-3.1927517	-3.1111834	-2.528227
-0.22538282	-0.88194808	-1.499516	-1.8925304	-1.9624873	-1.741016	-1.377238	-1.0723485
0.90532866	0.67870456	0.42208938	0.24668775	0.25562985	0.47615568	0.82351775	1.1193614
-0.54992655	-0.33976796	-0.53414569	-1.1451966	-2.0206187	-2.9035304	-3.5524469	-3.8642791
1084	1094	1104	1114	1124	1134	1144	1154
-1.45525521	-1.01847252	-0.95623507	-1.39188435	-2.27624855	-3.37968608	-4.37596465	-4.9836405

1519.486215	1524.655704	1529.822335	1534.986035	1540.146732	1545.304354	1550.458827	1555.61008
-11.01741378	-9.731876384	-14.12480378	-9.179712349	-8.787483694	-8.463838436	-7.703234646	-8.285438879
1902.866352	1905.065612	1907.244851	1909.404008	1911.543019	1913.661824	1915.76036	1917.838564
-9.7	-9.7	-9.75	-9.85	-9.775	-9.525	-9.375	-9.325
1509	1514	1519	1524	1529	1534	1539	1544
-7.9389443	-6.5312209	-5.5041313	-4.9031731	-4.5639713	-4.2440672	-3.7741832	-3.15167
-1.3843687	-1.2119685	-0.88611125	-0.44261629	0.023188305	0.37577921	0.48359128	0.27398025
2.1753873	2.1803523	1.9607507	1.6499437	1.3758099	1.2044599	1.1191297	1.0449235
-1.8851306	-1.8641028	-1.9152229	-1.9985626	-2.0162001	-1.8653651	-1.5065484	-1.0100067
1004	1014	1024	1034	1044	1054	1064	1074
-4.0605179	-4.0444551	-3.8759736	-3.6485063	-3.39201	-3.069825	-2.6256781	-2.0549302

1478.035899	1483.225709	1488.413225	1493.598376	1498.781093	1503.961306	1509.138944	1514.313938
		-17.06993276			-15.76270932	-14.25635638	-11.02145389
1884.558901	1886.916115	1889.253799	1891.571893	1893.870334	1896.149062	1898.408015	1900.647132
-10.075	-10.025	-9.875	-9.625	-9.575	-9.725	-9.775	-9.725
1469	1474	1479	1484	1489	1494	1499	1504
-1.2135505	-3.3070513	-5.8256741	-8.2564788	-10.05358	-10.840956	-10.550293	-9.4323909
-2.6152574	-2.0980682	-1.6921805	-1.4343365	-1.3225784	-1.3226466	-1.3783844	-1.4218622
-2.3303446	-2.02111	-1.5990315	-1.0270404	-0.30364931	0.50664746	1.278785	1.8693004
-0.009831531	-0.35695031	-0.78342036	-1.2306421	-1.6158521	-1.8690145	-1.9668159	-1.9458164
924	934	944	954	964	974	984	994
2.32051307	1.66415969	0.81561114	-0.2036017	-1.31220279	-2.37566196	-3.2456009	-3.8151168

1436.443063	1441.648761	1446.85271	1452.054843	1457.255093	1462.453392	1467.649672	1472.843864
-4.798939388	-5.617959626	-5.07472766	-5.275136585	-5.032170317	-4.740944577	-8.407891357	-7.302590659
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1429	1434	1439	1444	1449	1454	1459	1464
1.1466381	1.076568	0.89366589	0.77190207	0.79811118	0.88537818	0.7773484	0.15262811
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776.5999932	781.5693314	786.5433668	791.5220646	796.5053899	801.4933074	806.4857818	811.4827774
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1406.636189	1411.12562	1415.602849	1420.067831	1424.520518	1428.960863	1433.388819	1437.804339
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789	794	799	804	809	814	819	824
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1.3608555	1.705836	1.9457414	2.0045154	1.8608914	1.5565546	1.1772149	0.81418547
1.4105077	1.4505256	1.4516513	1.4069367	1.3179384	1.1982706	1.0738322	0.97761616
1.0107501	1.7840436	2.1219053	2.0479467	1.6902391	1.2257212	0.80623236	0.4952529
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737.0184788	741.9490165	746.8845211	751.8249596	756.7702988	761.7205056	766.6755461	771.6353867
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709	714	719	724	729	734	739	744
2.3474351	2.423933	2.4118309	2.3178436	2.1907765	2.0909707	2.0581099	2.0945783
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						-536	-526
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549	554	559	564	569	574	579	584
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509	514	519	524	529	534	539	544
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429	434	439	444	449	454	459	464
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389	394	399	404	409	414	419	424
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349	354	359	364	369	374	379	384
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309	314	319	324	329	334	339	344
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269	274	279	284	289	294	299	304
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229	234	239	244	249	254	259	264
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189	194	199	204	209	214	219	224
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149	154	159	164	169	174	179	184
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69	74	79	84	89	94	99	104
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29	34	39	44	49	54	59	64
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0.23622233	0.72140825	1.3424954	1.9723886	2.4781732	2.7740793	2.8599248	2.8220597
0.52400365	0.59831663	0.7605169	1.0293702	1.3702335	1.6986007	1.909918	1.9251812

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-2.491352609	-2.697965646	-2.82258716	-3.160653289	-3.369830309	-2.824271638	-3.39895252	-4.291501532
417.2333007	423.2800046	429.321358	435.3573331	441.3879022	447.4130373	453.4327104	459.4468934
-8.58	-11.64	-9.21	-8	-8.26	-10.46	-10.655	-10.605
-131	-126	-121	-116	-111	-106	-101	-96
2.0185412	1.7000477	1.2841991	0.83852052	0.42529128	0.10347115	-0.067402085	-0.033053852
-0.1049945	-0.12402559	-0.079444171	0.031468662	0.18073183	0.32502513	0.42893005	0.48554719

-61.37036892	-57.69442246	-54.010892	-50.31977546	-46.62107095	-42.91477668	-39.20089106	-35.47941264
-3.113351522	-3.221181276	-3.070963919	-2.623591908	-2.819203127	-2.790628971	-2.818695536	
368.6703394	374.7588629	380.8422537	386.920485	392.9935298	399.061361	405.1239514	411.1812738
-10.135	-10.285	-10.795	-11.345	-10.14	-8.74	-8.33	-10.01
-171	-166	-161	-156	-151	-146	-141	-136
0.36142625	0.60619517	0.867023	1.1952451	1.5705803	1.915762	2.1388898	2.1769281
-0.98625687	-0.91859692	-0.71644833	-0.46031694	-0.23065247	-0.082940312	-0.032997813	-0.056919724

-90.5052155	-86.88984816	-83.26691888	-79.63642438	-75.99836151	-72.35272729	-68.69951888	-65.0387336
-4.50933925	-4.218399678	-3.570655955	-4.309496217	-4.042854973	-4.095116217	-3.373427455	-3.586860022
319.7805657	325.9091956	332.0329041	338.1516651	344.2654525	350.3742401	356.4780014	362.57671
-10.535	-10.685	-12.095	-13.645	-12.585	-11.235	-10.605	-10.055
-211	-206	-201	-196	-191	-186	-181	-176
-1.1612684	-1.8361651	-2.2097775	-2.1418137	-1.694424	-1.0582618	-0.43881555	0.038069879
1.4911176	1.4818963	1.2964896	0.93385915	0.44377209	-0.085101238	-0.55035253	-0.86581845

-119.1563689	-115.6013606	-112.0388221	-108.4687488	-104.8911366	-101.3059811	-97.71327828	-94.11302435
	-8.112038978	-4.006689673	-3.940634743	-4.867260902	-4.25605651	-9.034462203	-10.13220004
270.5774446	276.7445212	282.9068808	289.0644984	295.2173487	301.365406	307.5086451	313.6470402
-12.075	-9.825	-10.23	-10.93	-11.045	-11.095	-10.785	-10.435
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1.2307765	1.1268321	1.0200553	0.94902775	0.94956395	1.037332	1.1950752	1.37103

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221.0740147	227.2779314	233.4773291	239.6721834	245.86247	252.0481641	258.2292411	264.4056762
-11.285	-11.935	-11.415	-10.765	-11.645	-12.695	-13.385	-14.035
-291	-286	-281	-276	-271	-266	-261	-256
-6.5546516	-5.6222665	-4.6453065	-4.0826805	-4.2347887	-5.0979308	-6.3435079	-7.4400365
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-212.3155488	-205.6003583	-198.8557163	-192.0815576	-185.2778196	-178.4444415	-171.5813652	-164.6885344
-5.220438619	-8.791704657	-6.757167169	-7.482320402	-8.078023029		-4.656693601	-5.555377956
171.2828881	177.5220917	183.7569676	189.9874922	196.2136419	202.4353928	208.6527213	214.8656033
-13.125	-14.375	-12.925	-11.175	-11.09	-11.19	-10.975	-10.725
-331	-326	-321	-316	-311	-306	-301	-296
-0.2631583	-0.97759309	-1.975598	-3.2413022	-4.6449782	-5.9346485	-6.8047441	-7.0226306
1.1805746	1.1986921	1.2121052	1.2224654	1.2334868	1.2478067	1.264901	1.2815346

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	-13.56783276			-13.14637952	-5.05362347		-8.790780764
121.2162505	127.4892412	133.7580887	140.0227703	146.2832632	152.5395445	158.7915912	165.0393801
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-371	-366	-361	-356	-351	-346	-341	-336
-0.85934466	-0.91937293	-0.60868213	-0.14327225	0.26367619	0.47688498	0.45382728	0.20499723
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		-8.443780503	-15.66528054	-14.92749508	-10.28295183	-8.153029682	
70.88586119	77.19119233	83.49255819	89.78993692	96.08330652	102.3726449	108.6579299	114.9391393
-12.72	-12.52	-13.4	-14.4	-12.835	-10.985	-12.69	-14.79
-411	-406	-401	-396	-391	-386	-381	-376
1.4411834	2.3852899	3.0864325	3.245126	2.7677198	1.7993714	0.65549592	-0.31326169
1.5492742	1.4353358	1.2902373	1.1464356	1.0352408	0.97589852	0.96986797	1.0025013

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20.30305291	26.63933123	32.97181553	39.30048476	45.62531778	51.94629333	58.26339008	64.57658655
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-451	-446	-441	-436	-431	-426	-421	-416
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1.3364396	1.3570614	1.3886625	1.438453	1.5036578	1.5694006	1.6124481	1.6099009

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-4.561596248	-3.497096913		-3.12554002	-3.266577152	-4.072359971	-5.73896469	-8.244248442
-30.52126799	-24.15538246	-17.79312637	-11.43451993	-5.079583453	1.27166264	7.619197832	13.9630015
-9.74	-9.34	-9.66	-10.06	-10.73	-11.43	-11.5	-11.5
-491	-486	-481	-476	-471	-466	-461	-456
-3.9274628	-4.1400249	-4.4073111	-4.5137277	-4.2374646	-3.4525977	-2.2053361	-0.72467013
1.0559739	1.0838279	1.1157551	1.1549404	1.2003132	1.2464546	1.2863397	1.3156838

-457.7787332	-452.1644385	-446.5249631	-440.8601639	-435.1698993	-429.4540296	-423.7124166	-417.9449241
-9.665893435	-3.887582982	-3.656208152	-4.002647906	-4.64663799	-6.436947251	-5.047282278	-5.026021843
-81.57662162	-75.18241553	-68.79168098	-62.40443732	-56.02070405	-49.64050074	-43.26384708	-36.89076287
-9.4575	-9.1325	-8.965	-8.815	-8.935	-9.085	-9.55	-10.05
-531	-526	-521	-516	-511	-506	-501	-496
-4.5746875	-4.6420948	-4.7102558	-4.6991527	-4.5614427	-4.31723	-4.0556397	-3.8967842
0.77301892	0.80459436	0.83758491	0.87411039	0.91416668	0.95527927	0.99379938	1.0271991

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-132.8529545	-126.4316613	-120.0136883	-113.5990541	-107.1877773	-100.7798768	-94.37537138	-87.97427995
-10.95	-10.45	-11.435	-12.585	-11.665	-10.515	-10.1075	-9.7825
-571	-566	-561	-556	-551	-546	-541	-536
-3.1050516	-3.8125084	-4.3672846	-4.6993744	-4.809334	-4.7606777	-4.6513515	-4.5732366
	0.52466783	0.55787467	0.59224596	0.62878816	0.66689276	0.70466272	0.7402004

-544.3061948	-539.0739636	-533.8190659	-528.5413327	-523.2405967	-517.9166921	-512.5694544	-507.198721
		-10.90183723			-10.01170228	-11.48579882	-9.451513189
-184.3406397	-177.8934393	-171.4494146	-165.0085833	-158.5709631	-152.1365721	-145.7054282	-139.2775496
-11.17	-11.47	-11.635	-11.785	-10.99	-10.09	-10.63	-11.33
-611	-606	-601	-596	-591	-586	-581	-576
-3.3248356	-2.8266371	-2.2186252	-1.6830007	-1.3801146	-1.4036261	-1.7594239	-2.370798

-585.3688054	-580.311649	-575.2332302	-570.1333684	-565.0118844	-559.8686006	-554.7033407	-549.5159299
-6.95394619	-7.600104361	-8.453333127	-8.550009761	-11.49399301	-10.0936854		
						-197.2444973	-190.7909982
						-10.185	-10.835
-651	-646	-641	-636	-631	-626	-621	-616
-2.5035357	-2.1840472	-2.0867825	-2.2720053	-2.6772135	-3.1455784	-3.4901145	-3.5663042

-625.0827249	-620.1890045	-615.275515	-610.3420652	-605.3884649	-600.4145256	-595.4200596	-590.4048811
-8.86095822	-8.207925412	-8.740526371	-8.188918989		-10.09377037	-7.319497828	-6.699258507
-691	-686	-681	-676	-671	-666	-661	-656
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-9.058161554	-10.42652564		-6.637289981	-8.56979418	-5.991561374		-11.86338288
-731	-726	-721	-716	-711	-706	-701	-696
-0.086612436	-0.46405139	-0.73954957	-0.81852667	-0.68248565	-0.39722176	-0.09605496	0.061559193

-700.8546944	-696.2502336	-691.6292334	-686.9914832	-682.3367734	-677.6648958	-672.975643	-668.268809
-6.54231075	-5.794904019	-6.199946082		-5.398703833	-8.198242163	-8.780624316	
-771	-766	-761	-756	-751	-746	-741	-736
-3.1791655	-2.7827163	-1.9977299	-1.083799	-0.28545077	0.22817155	0.39336692	0.24976092

-737.1205906	-732.6407343	-728.1460619	-723.6363543	-719.1113936	-714.5709627	-710.0148456	-705.4428275
-4.950183401	-7.248276163	-5.943460298	-7.09461011	-5.964098535		-6.014745716	-7.555450892
				-791	-786	-781	-776
				0.99711059	-0.73260537	-2.1418155	-2.9886444

-772.4526671	-768.0833378	-763.7009794	-759.3053653	-754.8962697	-750.4734679	-746.0367359	-741.5858508
-9.437015401			-5.923589585	-9.822581122	-6.174062682	-5.303955828	-5.137095967

-776.8091949	-9.880105793									
-781.1531496										
-785.4847605										
-789.8042578										

Appendix G: Water Column Results from 9/20/2014 and 8/31/2015

LDO (mg/L)	Turbidity (NTU)	pH	TDS (g/L)	Salinity (ppt)		SPC (uS/cm)	Temperature (Celsius)	ORP (mV)
7.78	0	0	8.43	0.221	0.17	345.5	19.55	371
7.72	1	0	8.42	0.2215	0.17	346.3	19.55	370
7.75	2	0	8.42	0.2211	0.17	345.3	19.53	369
7.76	3	0	8.42	0.2209	0.17	345.4	19.49	369
7.75	4	0	8.42	0.2209	0.17	345	19.45	369
7.75	5	0	8.42	0.2208	0.17	345.1	19.45	369
7.72	6	0	8.38	0.2212	0.17	345.5	19.35	369
6.63	7	0	8.02	0.2255	0.17	352.3	18.57	373
0.72	8	0	7.63	0.2331	0.18	368.5	17.59	379
0.04	9	0.2	7.32	0.2487	0.19	388.8	12.81	385
0.04	10	0.4	7.33	0.2511	0.19	392.5	10.73	385
0	11	0.6	7.33	0.2524	0.2	392.7	9.66	384
0	12	0.7	7.72	0.2521	0.2	393.4	8.72	382
0	13	0.8	7.28	0.251	0.2	392.3	7.28	382
0	14	0.9	7.28	0.2502	0.19	391.5	6.71	382
0	15	1	7.24	0.2508	0.19	391.4	6.43	382
0	16	1.2	7.21	0.2502	0.19	391	6.05	383
0	17	1.2	7.21	0.2503	0.19	391.2	5.85	384
0	18	1.3	7.23	0.2505	0.2	392.7	5.73	384
0	19	1.2	7.07	0.2513	0.2	392.8	5.7	400
0	20	1.2	7.07	0.2519	0.2	394.6	5.65	398
0	21	1.4	7.06	0.2519	0.2	393.7	5.56	394
0	22	1.4	7.07	0.2522	0.2	394.3	5.53	382
0	23	1.6	7.08	0.253	0.2	394.9	5.54	357
0	24	1.9	7.09	0.2531	0.2	395.6	5.48	253
0	25	116.4	7.1	0.2534	0.2	395.7	5.48	117

LDO (mg/L)	Turbidity (NTU)	pH	TDS (g/L)	Salinity (ppt)		SPC (uS/cm)	Temperature (Celsius)	ORP (mV)
9.26	0	2.6	8.7	0.1996	0.15	311.8	24.76	256
9.34	1	2.6	8.74	0.199	0.15	310.9	23.65	257
9.23	2	2.7	8.73	0.1986	0.15	310.8	23.15	257
9.19	3	2.8	8.76	0.199	0.15	310.3	22.34	257
8.48	4	2.9	8.71	0.1992	0.15	311.3	22.38	259
8.07	5	2.9	8.666	0.1999	0.15	312.3	22.16	261
5.47	6	2.9	7.99	0.2205	0.17	343.9	20.23	272
4.02	7	3	7.66	0.2355	0.18	368.7	15.98	279
2.67	8	3	7.58	0.236	0.18	368.5	12.78	281
1.1	9	3	7.51	0.2369	0.18	370.1	10.85	283
0	10	2.9	7.49	0.2373	0.18	370.9	9.55	284
0	11	2.8	7.49	0.2375	0.18	370.9	9.24	284
0	12	2.7	7.49	0.2381	0.18	372.4	8.46	285
0	13	2.7	7.48	0.2381	0.18	371.7	7.91	285
0	14	2.7	7.47	0.2379	0.18	371.8	7.39	285
0	15	2.7	7.46	0.2374	0.18	371.8	7.09	286
0	16	2.7	7.46	0.2374	0.18	372.4	6.83	286
0	17	2.7	7.45	0.2377	0.18	371.6	6.63	286
0	18	2.7	7.45	0.2378	0.18	371.4	6.57	287
0	19	2.7	7.45	0.238	0.18	371.9	6.49	287
0	20	2.7	7.45	0.2381	0.18	372.2	6.46	287
0	21	2.7	7.46	0.2385	0.18	372.7	6.43	287
0	22	2.7	7.46	0.2399	0.19	373.8	6.39	288
0	23	2.9	7.47	0.24	0.19	375	6.37	287
0	24	3.4	7.5	0.2427	0.19	374.3	6.33	146
0	25	5	7.5	0.2427	0.19	374.3	6.33	146

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Curriculum Vitae

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2010 - 2014

Publications and Presentations

- Albert, A.L., 2016. A Laminated Carbonate Record of Late Holocene Precipitation/Evaporation from Pretty Lake. Lagrange County, Indiana. Masters thesis, Indiana University.
- Albert, A.L., Bird, B., Gilhooly, W., Rudloff, O., Stamps, L., and Lowell, T. A 7,600 Year United States Midwest precipitation/evaporation record from Pretty Lake, LaGrange County, IN. American Geophysical Union Conference (San Francisco, CA, December 2015).
- Albert, A.L., Bird, B., Gilhooly, W., Rudloff, O., Stamps, L., and Lowell, T. Initial sedimentology, geochronology and oxygen isotope stratigraphy of a new core from Pretty Lake, Indiana: Exploring Midwestern hydroclimate during the last 2000 years. American Geophysical Union Conference (San Francisco, CA, December 2014).
- Albert, A.L., Hillman, A.L, Abbott, M.B., Colin A. Cooke C.A., Daniel J. Bain D.J., Juan Pablo Corella, J.P., Valero-GarcesB.L. Human History and Ecological Change

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Research and Training Experience

Graduate Researcher in Paleoclimatology at Indiana University-Purdue University Indianapolis

- Conducted research on historical climate change by reconstructing a 2,000-year United States Midwest precipitation/evaporation record
- Employed multitude of field, lab, and analytical techniques: lake coring, geochemical analyses, Surfer13 and MATLAB.
- Developed and presented research progress and results through poster presentations and thesis publications
- IUPUI School of Earth Sciences representative for the Graduate and Professional Student Government (GPSG)

Hydrogeology Field Camp, Clemson University

- Semester of comprehensive hydrologic projects with extensive field reports: potentiometric mapping, well installation, agricultural soil analysis and environmental remediation
- Created professional drilling and bore hole reports based on objective field measurements and site observations, with theoretical calculations

Conferences Attended

American Geophysical Union 2015 Fall Meeting, San Francisco

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Honors, Awards, Fellowships

IUPUI Travel Fellowship to 2015 American Geophysical Union conference (November 2015) $500 Funded

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